

Responding to Public Health Challenges (SALVE)

Programme memorandum

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1 BACKGROUND

1.1 Current research and health policy context

The recently introduced Gaining Health strategy of WHO/Europe emphasises the importance of chronic non-communicable diseases, which account for most of the disease burden in terms of deaths, lost productivity, and healthcare costs. They share common and well-established risk factors, underlying determinants and opportunities for prevention, including high blood pressure and serum cholesterol, alcohol and tobacco, obesity and low physical activity as well as dietary factors. Prevention should be the major approach for controlling these disorders. However, health promotion and prevention of non-communicable diseases account for a relatively small share of the health system budget, and health services are frequently oriented towards the treatment rather than the prevention of disease. Health differentials have been maintained – or even increased, with regard to mortality – in the past decades, despite an overall increase in life expectancy and well-being.

Escalation of healthcare costs remains a major concern in most countries. Reasons increasing health expenditure include an ageing population, resulting in increasing demand and use of services, together with the introduction of novel, very expensive drugs, medical procedures and interventions. A purchaser-provider split in healthcare services has led to changes in the organisation and delivery of healthcare. This development from regulation towards an open healthcare market is likely to continue. The Service Directive of the EU may also affect Finnish healthcare in the future.

A national project to secure the future of healthcare was launched by the Finnish Government in 2002. Its aim is to guarantee access to and quality of healthcare for all citizens, regardless of their financial resources. Also the ‘healthcare guarantee’ introduced in 2005 is setting new requirements for healthcare providers, as municipalities and hospital districts are obliged to provide diagnostic evaluation and treatment for patients with non-acute conditions within a defined period of time.

Information systems within healthcare are developing. Electronic patient records are being introduced and increasingly coordinated, which may open new opportunities for research, particularly in primary care. Founding of a national centre for register-based research is also expected to further strengthen the role of Finland’s unique healthcare registers in the study of common diseases in Finland. Moreover, integration of existing and new biobanks and molecular resources at the European level to construct a European Biobanking and Biomolecular Resources infrastructure has been initiated in the framework of the strategic roadmap for European research infrastructures. In Finland, national biobank policy is being articulated and the relevant regulation developed.

Finnish research in the field of public health sciences has a tradition of excellence in several fields, including lifestyle risk factors and genetic aetiology of several diseases of public health importance. The molecular genetic and epidemiological research conducted in Finland is well respected internationally. This is partly based on a unique infrastructure with nationwide high-quality registers covering healthcare, health insurance, specific diseases and causes of death, as well as vital status. Monitoring and surveillance based on the health information systems are able to identify health needs and emerging trends. High levels of skills and competence among researchers, positive attitude of the population towards health research, and public healthcare are also key elements for successful research in the field. Even if the

small size of the country is a limitation, it has also enhanced collaboration between researchers. Besides scientific output and international recognition, Finnish public health research has produced interventions that have been successful in reducing the disease burden ranging from cardiovascular disease, cancer and dental caries to suicides, asthma and diabetes. The North Karelia Project is one of the most famous population-level interventions worldwide, and the Alpha-Tocopherol, Beta-Carotene (ATBC) cancer prevention study is an example of a modern randomised prevention trial with a prolific scientific output. Screening has decreased the mortality from uterine cervical and breast cancers, and provides an example of the public health policy with rigorous scientific evaluation. Finland is widely regarded as a leading country in the planning, execution and evaluation of public health interventions.

1.2 Major public health issues

In most developed countries, the most common causes of death include cardiovascular diseases (including stroke) and cancer, in addition to external causes and pulmonary diseases. Alcohol-related diseases are major killers in working age population. Psychiatric, neurological and musculoskeletal disorders and diabetes constitute a major disease burden, in terms of disability-adjusted life years, lost productivity (sick absence) and health services use. Besides the traditional chronic diseases, emerging public health problems include obesity, mood disorders, as well as allergies and asthma. Furthermore, as the number of elderly people in the population continues to rise, diseases and functional limitations that are common to old age present another major challenge.

Many of the diseases causing the greatest disease burden share common risk factors, and underlying determinants. The major etiological factors affecting public health include tobacco and alcohol, inappropriate diets, and insufficient physical activity. These lifestyle factors result in physiological changes such as obesity, hypertension and type-2 diabetes. These risk factors exert only a small to moderate effect, but affect a substantial proportion of the population, though not distributed equally. They are influenced by individual choice, access and availability of these factors in our surroundings, as well as by political decisions and economic structures. Genetic differences between individuals also contribute to individual differences in the susceptibility to adopt unhealthy behaviour.

Even if life expectancy has increased in Finland during the past decades, it is still only at the average European level among men. Mortality has been compressed towards the older ages. Also, healthy life expectancy has increased, prevalence of chronic disease has decreased, and perceived health has improved. This has been achieved mainly through extensive research, preventive measures and early detection and treatment. Common, preventable conditions are major contributors to the healthy life expectancy. For instance, more than 80 per cent of the reduction in cardiovascular diseases has been attributed to changes in risk factors in the past 30 years. From 1993 to 2003 hospitalisations have decreased because of asthma by 70% and yearly costs/patient (daily allowances, drugs, hospital days, doctor consultation visits) have decreased by 50% because of early detection and treatment of asthma.

The most worrying trends in factors influencing public health are the increase of obesity, alcohol consumption and women's smoking. There are still significant and persistent differences in the population in these trends, especially in relation to education and area of residence. Clustering of unhealthy factors generates a health gap, and the most potential for gain is in the least privileged part of the population. Furthermore, the higher socioeconomic

groups tend to respond better to and benefit more from health interventions than the lower socioeconomic groups. Improving health literacy has the potential to enhance health-seeking behaviour in the most vulnerable population groups.

The widening health gap within the population is a major public health issue and measures to increase equity are urgently needed. Delivery of healthcare services is being re-organised and resource effectiveness may displace comprehensiveness as the key strategic goal. Preventive healthcare services have been the first to suffer from budget constraints. A more diverse cultural spectrum may also create new risk groups whose health status lags behind that of the main population. It would also be important to define the special groups at whom the interventions should be aimed, in order to meet the distinct goals related to the overall level of population health, equity (distributional justice), and effective use of resources.

The role of medicine has extended substantially during the past century and medicalisation has affected the way many aspects of everyday life are perceived and interpreted. Examples include reproduction and sexuality, ageing, human feelings such as grief, overweight, use of alcohol and stimulants, as well as learning difficulties. Medicalisation tends to explain the human behaviour and decisions dependent on the genetic and biological basis with medical interventions as an appropriate response. Medicalisation of normal life events has the tendency to strip the responsibility of individuals in society to behave and act in a positive and constructive way.

2 RATIONALE

The current disease panorama reflects past exposure. Correspondingly, the future health status of the population is based on the present. Scenarios and transitions that constitute the future challenges are foreseeable, and responding to the imminent hazards is not only possible but also necessary. The agenda of this research programme should provide the evidence that can be translated into public health measures.

Responding to public health challenges requires knowledge about the major causes of diseases and the effectiveness of the interventions aimed at decreasing the disease burden. An overt disease manifests the last stage in the pathogenetic process encompassing physiological, behavioural and social phenomena. Public health measures should focus on early events of this development. Lifestyle is a major factor influencing individual health, and behavioural factors should be targeted early on, in order to achieve sustained results and affect early events in the disease course. A small number of key determinants, including tobacco, alcohol, sedentary way of life, and unhealthy diet underlie much of ill health, as several major diseases share common risk factors. Furthermore, risk factors frequently cluster, and this is enhanced by the strong interrelationship between physical and mental health. The causes and development of these risk factors are not fully known and require further research, particularly the interplay of social, psychological and biological factors. Likewise, these well-established risk factors do not account for all the variability in disease risk and there is a need to discover and quantify the role of new risk factors, for example sleep disturbances, noise and the lack of social support.

There are excellent possibilities in Finland to anticipate and counteract major challenges to public health. Finland's high-quality healthcare system, unique healthcare registers and

population databases are major assets that have helped Finnish research reach the international cutting edge. They have provided invaluable resources for the collection of extensive and representative datasets, which is not possible in many other countries. Indicators for monitoring behavioural and lifestyle risk factors as well as major diseases are readily available from population-based registers and databases. Comprehensive public healthcare provides comprehensive and accessible information on health outcomes. Finland's genealogical records and well-established population history descending from a small founding population facilitate studies in genetic epidemiology. Finnish scientists have a high-profile record of research in the crossroads of genetic epidemiology, clinical science and molecular medicine. This research area will be further strengthened by the recent establishment of the Institute for Molecular Medicine Finland, a national research institute focusing on molecular medicine, genetics and epidemiology. Workable solutions have been found to the data protection issues that surround the use of individual-level data, which has helped to maintain the confidence and positive attitude towards scientific research among the population. These assets also greatly facilitate the evaluation of interventions and allow for the examination of mechanisms generating health differentials. Yet, some gaps remain in the availability of health information, for example, maternity and child healthcare clinics, school healthcare, as well as many conditions that do not require hospitalisation or cause mortality.

3 OBJECTIVES OF THE RESEARCH PROGRAMME

The overall goal of the SALVE programme is to provide evidence for responding to the current and future key public health issues.

The strategic aims of the programme are:

- to enable planning, development and implementation of new procedures and policies to improve public health;
- to support evaluation of existing interventions and approaches in healthcare and policy;
- to open new opportunities for health promotion;
- to establish new collaborative networks across disciplinary boundaries;
- to disseminate information on research results and to meet the information needs of society on major public health issues and health promoting activities;
- to create new knowledge aiming at significant public health impacts, in addition to scientific impacts; and
- to support researcher training, and in particular to provide opportunities for postdoctoral researchers.

The specific objectives are:

- to strengthen the knowledge base concerning the hereditary, social and environmental determinants of health;
- to clarify the role of different life-course stages and events for adult health;
- to better understand the development of health inequalities; and
- to provide new approaches for predicting future development of public health.

4 THEMES OF THE RESEARCH PROGRAMME

The SALVE programme should provide the evidence that can be translated into a reduced disease burden and improved population health. The aim of the programme is to produce knowledge that can be applied to prevention of major diseases, and to minimise the impacts of illnesses. It should not only identify key public health issues, but also provide means to act on them. The main focus of the programme is, therefore, on measures aimed at improving public health. Instead of applying a disease-centred approach, the programme places emphasis on early intervention before the onset of disease hazards. It is important to create opportunities and environments as well as to remove obstacles from individuals, groups and communities to making healthy choices, engaging in ‘healthy activities’, and maintaining health assets. Research-based knowledge is needed to evaluate effectiveness of policies and measures, to facilitate adoption of procedures with proven effectiveness, as well as to identify the target groups that would benefit most from interventions.

Combining scientific excellence and applicability of the research results calls for a multidisciplinary approach that covers both the impact of etiologic factors and the evaluation of public health measures to be applied. Attention should also focus on up-stream causes, i.e. determinants of risk factors, including health-related values and attitudes, social, political, and behavioural factors including social networks or social support.

Several important public health problems share determinants, and an integrated approach focusing on population sub-groups and several determinants, rather than a specific disease, therefore, has the potential to substantially reduce health risks. Public health opportunities also exist in the more effective utilisation of established, evidence-based interventions, for instance in their more systematic adoption and wider provision. Multisectoral approaches incorporating health promotion, disease prevention and disease management provide an effective strategy for shifting emphasis in disease control towards prevention. Multiple-risk factor or total-risk interventions at the population level may provide substantial returns, even when the average impact at the individual level is modest. Healthcare services should fit needs and priorities so that effective approaches targeting key issues are provided. The potential health gain from interventions directed at population sub-groups at increased genetic risk remains unknown, and more knowledge of the response of individuals with differing genotypes to interventions is needed. Exposures during prior generations, pregnancy and early life may be relevant in many conditions. There is a need for more sophisticated mathematical and theoretical approaches to accommodate the increasingly complex models of disease causation.

The research programme should cover all stages of the disease process, various intervention strategies and different disciplines. The main themes included in the programme are indicated below. **Proposals or research consortiums covering more than one of these fields are strongly encouraged.** A consortium can encompass both empirical research and work aimed at methodological or theoretical development.

4.1 Health-protecting and -promoting factors: hereditary, social and environmental determinants of health

The main objective of research within this theme is to open new opportunities to the utilisation of knowledge on the effects of determinants of health by combining the strengths of Finnish molecular genetics, clinical science and epidemiology, as well as the infrastructure of society, particularly its healthcare registers and population databases.

The availability of genome-wide technologies and unique family and epidemiological study samples with extensive phenotypic and lifestyle information facilitates the identification of the genes and specific alleles predisposing to or protecting from common diseases, their critical trait components and/or disease determinants. Any successful gene identification should be followed by evaluation of the population impact of the identified variants, including examination of gene-gene and gene-environment interactions. A global view of the impact of the relative role of genetic and environmental and lifestyle risk factors derives from the use of large epidemiological cohorts (incl. twin cohorts). In addition, knowledge of genetic factors may create opportunities for identification of individuals at high risk, thus enabling earlier, more targeted interventions or individualised treatments. It may also enable tailoring of medications to achieve optimal treatment response according to genotype.

This theme also comprises projects that aim to identify environmental exposures and social and psychological factors relevant for health. Such exposures include risks related to technological change and community structures (e.g. noise and particulate air pollution from traffic; moisture damage, moulds, indoor air pollution and radon in buildings, electromagnetic fields and other exposures from information technology, as well as ultraviolet radiation). Moreover, globalisation facilitates the emergence of new infectious diseases.

Social and psychological factors are important determinants and risk factors of disease and well-being. Early childhood is increasingly recognised as important to future health and normal development. In addition to traditional measures of social structures such as education, social class and occupation as indicators of health risk, new and more focused concepts such as social capital, social networks, local social norms and cultural bonds have attracted increasing interest. These can affect disease risk directly or modify the effects of other risk factors. Personality factors and other psychological characteristics also need to be considered in models of health and its development.

Biological, psychological and social factors do not act in isolation, but should integrate the individual and its development, the family and the surrounding society (from peers to the local community and global influences). Sophisticated mathematical models with both multilevel and longitudinal components based on biological, psychological and social exposures over time are needed to provide a comprehensive and realistic framework for research.

4.2 Life-course approaches and critical periods of life

Early life from the foetal period is a determinant of subsequent health possibly including diabetes, cardiovascular disease, allergies, neuropsychiatric disorders and some cancers. Early life determinants of health may include maternal exposures and placental function during the foetal period as well as postnatal stages of growth and development, lifestyle and living

circumstances. The adaptive responses may lead to persistent physiological changes. Developmental processes may result in adaptive metabolic changes that lead to adverse health effects in adulthood. Effects may depend on the timing of exposure as developmental phases may differ in sensitivity or susceptibility. The mechanisms by which these influences are carried over to a later lifespan are not well-known, but epigenetic phenomena may be involved. Life-course studies cover long-term follow-up studies from childhood to mature and old age, cross-generational studies, as well research on the effects of various exposures at different stages of life.

This is an emerging field where new insights are arising rapidly and many recent findings still require confirmation. Finnish researchers have already contributed substantially to the field, and excellent opportunities for further work exist in Finland. There are also major gaps in the knowledge of the critical and sensitive periods during the life course, as well as the contribution of genes and the environment during these periods. Research on the risk factors from early childhood could provide a basis for prevention and intervention programmes. Ideally, the research should include the entire life-course from pregnancy, even pre-pregnancy, to adulthood including old age. This theme focuses on childhood events and processes as determinants of subsequent health, rather than child health as an outcome.

4.3 Health inequalities and clustering of ill health

The existence of social differences in health is already well established. Income, occupation and education are powerful predictors of health status throughout society and their effect is not limited to those worst off in the community, such as the poor, unemployed or single parent families. Research on the mechanisms generating and maintaining health inequalities could focus on structural factors, such as health and social policies, societal changes, healthcare utilisation (incl. preventive services) or lifestyle factors. The importance of different aspects of social stratification is not clear and more research is also needed on mechanisms mediating the effects, such as autonomy, social networks and marginalisation. The role of behavioural, ethnic and cultural factors requires further research. Such studies could identify the targets for intervention. More information is needed about measures to improve the health of marginal groups of society that have clusters of health risks. New approaches such as multilevel analysis, structural equations and directed acyclic graphs may help reveal the mechanisms generating and maintaining socio-economic differentials in health.

In policy research, experimental studies are seldom feasible, and other comparative approaches and case studies are therefore used. The applicability of such research is their role for the planning and evaluating measures aimed at reducing interventions, particularly those focusing specifically on the most disadvantaged population groups. However, it is important to assess also the unwanted aspects of policy for the health differentials within the population. Such research benefits from a broad multidisciplinary approach including social, economic and health sciences. The combination of quantitative and qualitative approaches may provide new information.

4.4 Predicting future health

The spectrum of disease changes with society and various stages of such process are described as epidemiologic transition. Scenarios and transitions that constitute the future challenges are foreseeable, and early response to the emerging hazards is needed. New tools are also needed to aid planning, priority setting and resource allocation.

Public health challenges can be predicted on the basis of current trends, in particular among the young age groups, i.e. the future adult and elderly population. In Finland, the well-established monitoring and surveillance systems provide information that can be used to identify disease trends and predict the imminent public health hazards. One such approach is the utilisation of data on child and adolescent health in age-period-cohort analyses. However, long-term changes cannot usually be detected by linear extrapolation, but novel hazards may emerge or currently minor factors may assume a dominant role. Therefore, detection of weak signals is important to unravel potential scenarios.

Important resource decisions have to be made without certainty of future development, including education of healthcare personnel, preparedness for providing mass vaccinations etc. The current major demographic transition is a strongly increasing number of the elderly population. Immigration, though still modest in Finland, is also likely to increase, with more contacts to Russia and developing countries. Climate change, potential pandemics and globalisation of trade are universal phenomena, affecting also Finland. New forms of prevailing societal phenomena, for instance the role of medicalisation in guiding people's behaviour, may shape population health differently than currently assumed.

Predicting future health relies on extensive and reliable public health statistics. The utilisation of Finnish health registers and longitudinal surveillance data creates unique possibilities for research. The development of new prediction approaches to identify plausible scenarios and to detect weak signals of potential future importance is required. Simulation methods such as Monte Carlo models may be used to extend prediction methods beyond linear extrapolation. International comparative studies may also provide clues to future developments in Finland, in particular by countries that are thought to be further ahead in the processes evolving in Finland.

5 IMPLEMENTATION OF THE RESEARCH PROGRAMME

5.1 Funding

The Responding to Public Health Challenges Research Programme (SALVE) is coordinated by the Academy of Finland and implemented jointly by the participating funding agencies: Research Council of Norway (RCN), the UK Medical Research Council (MRC) and five institutes from the Canadian Institutes of Health Research (CIHR) - Institute of Gender and Health (IGH); Institute of Human Development, Child and Youth Health (IHDCYH); Institute of Neurosciences, Mental Health and Addictions (INMHA); Institute of Nutrition, Metabolism and Diabetes (INMD); and Institute of Circulatory and Respiratory Health (ICRH).

Only consortium applications will be funded within the SALVE programme. Each funding agency will support the research teams based within their own country. The Academy of Finland will support research in all thematic areas of the programme. The funding provided by CIHR, MRC and RCN is especially targeted at certain research areas according to the priorities of the participating institutes (CIHR) and according to the thematic areas of the ongoing research programme (RCN) (see further details in Chapter 5.1.1) MRC is especially interested in supporting research that will target the 'Life-course approaches and critical periods of life' theme of this initiative (see Section 4.2).

The projects selected to the programme are funded for a maximum of four years. The funding will be available from the beginning of 2009. The Board of the Academy of Finland has reserved 8 million euros in funding for the SALVE programme. The Academy will fund research teams in Finland, with or without international collaboration. Joint bilateral and multilateral projects consisting of team(s) from Finland and teams from Canada and UK as well as bilateral projects between Norwegian and Finnish teams are, however, strongly recommended (RCN is going to fund only bilateral Norwegian-Finnish projects). Only consortia including at least one Finnish team will be funded through the SALVE programme.)

5.1.1 International cooperation

5.1.1.1 Canada

The Canadian Institutes of Health Research (CIHR) is the major federal agency responsible for funding health research in Canada. It aims to excel in the creation of new knowledge, and to translate that knowledge from the research setting into real world applications. CIHR consists of 13 'virtual institutes'; each headed by a Scientific Director and assisted by an Institute Advisory Board. Five of its institutes: Institute of Gender and Health (IGH), Institute of Human Development, Child and Youth Health (IHDCYH), Institute of Neurosciences, Mental Health and Addictions (INMHA), Institute of Nutrition, Metabolism and Diabetes (INMD), and Institute of Circulatory and Respiratory Health (ICRH) will be participating in the Responding to Public Health Challenges Research Programme (as a foreign funding partner).

CIHR Institute of Gender and Health (CIHR-IGH)

CIHR-IGH supports research that addresses how sex (biological-genetic factors) and gender (social-cultural experiences) interact with other socio-cultural, bio-physical, and political-economic factors to influence health, and create conditions that differ with respect to risk factors or effective interventions for males and females throughout the lifespan. IGH encourages applicants to demonstrate the use of gender and sex based analysis (GSBA) in applications. GSBA is an approach to research and evaluation which systematically inquires about sociocultural (gender-based) and biological (sex-based) differences between women and men, boys and girls, without presuming that any such differences exist. Please refer to the Guide to Gender and Sex-Based Analysis (<http://www.cihr-irsc.gc.ca/e/34032.html>) for more information.

CIHR Institute of Human Development, Child and Youth Health (CIHR-IHDCYH)

CIHR-IHDCYH promotes and supports research that improves the health and development of mothers, infants, children, youth and families in Canada and throughout the world. Through

the support, researchers address a wide range of health concerns, including those associated with reproduction, early development, childhood, adolescence.

CIHR Institute of Neurosciences, Mental Health and Addictions (CIHR-INMHA)

INMHA supports research to enhance mental health, neurological health, vision, hearing, and cognitive functioning and to reduce the burden of related disorders through prevention strategies, screening, diagnosis, treatment, support systems, and palliation.

CIHR Institute of Nutrition, Metabolism and Diabetes (CIHR-INMD)

INMD supports research to enhance health in relation to diet, digestion, excretion, and metabolism, and to address causes, prevention, screening, diagnosis, treatment, support systems, and palliation for a wide range of conditions and problems associated with hormone, digestive system, kidney, and liver function.

CIHR Institute of Circulatory and Respiratory Health (CIHR-ICRH)

ICRH supports research into the causes, mechanisms, prevention, screening, diagnosis, treatment, support systems, and palliation for a wide range of conditions associated with the heart, lung, brain (stroke), blood, blood vessels, critical and intensive care, and sleep. The ICRH vision is to achieve international leadership by fostering an environment of openness, excitement, energy, commitment and excellence in highly ethical, partnered initiatives focused on research, research training, and research translation for the circulatory and respiratory sciences and for the betterment of the health of Canadians. In March 2007, following consultations with the ICRH community and the Institute Advisory Board, the following new priorities were identified:

- Genetics/biomarkers
- Psychosocial, behavioural, environmental research
- Technology
- Sleep, circadian impact on circulatory/respiratory health, metabolism and obesity
- Injury repair, inflammation mechanisms of chronic disease
- Transplantation, regeneration, stem cells, bioethics
- Aging, changing epidemiology

Through the programme, Finnish and Canadian research teams can jointly apply for funding for joint projects. For collaborations, CIHR Institutes will fund grants of up to \$30,000 CAD per year. The CIHR contribution will only pertain to the project component that is carried out in Canada and the funding will initially be for a period of two years, with the possibility of renewal. The CIHR Institutes will provide funding for projects relevant to their mandates and priorities. Among the CIHR partners:

- CIHR- IGH is particularly interested in the health inequalities theme of this programme. Specifically, IGH will fund a maximum of 4 grants for two years in any of the following areas:
 - A) Contributes to our understanding health inequalities, including research that:
 - focuses on vulnerable populations and examines factors that influence vulnerability and inequalities
 - examines factors that influence vulnerability and inequalities, such as: biological (genetics and sex differences) factors and socio-environmental, cultural and structural factors. Applicants should consider the ways in which biological and/or environmental and/or

socio-cultural determinants and their interactions result in some sub-populations becoming ‘vulnerable’

- describes and analyses health inequalities at the population level.

B) Addresses health inequalities, such as:

- intervention research that aims to rigorously evaluate policy and program impacts on health inequalities, and
- demonstration/evaluation programmes of health care interventions focused on vulnerable populations that can help reduce health inequalities.
- IHDCYH will support research on the effects of the physical and social environment on child health, early life determinants of long-term health, and health inequalities among mothers, children, and youth. IHDCYH will fund a maximum of 3 grants.
- INMHA will consider co-funding of applications focusing on research relevant to its mandate
- INMD will support research in any of the four thematic areas that focuses on preventing or treating obesity. INMD will fund 1 grant for up to 4 years, and possibly more grants depending on available funds.
- ICRH will support research in any of the four thematic areas that focus on conditions associated with the heart, lung, brain (stroke), blood, blood vessels, critical and intensive care, and sleep. The Institute is prepared to fund a minimum of 2 highly ranked and ICRH-relevant applications for two years that focus on two different areas from the ICRH mandate (e.g., one in the area of circulatory health and the other in respiratory health). Additional contributions will depend on availability of funds.

If an application is deemed relevant to more than one CIHR Institute, the corresponding Institutes may consider co-funding the project to maximise the number of funded applications.

5.1.1.2 Norway

The Research Council of Norway (RCN) has an annual budget of more than NOK 5 billion and plays a central role in Norwegian research. The mandate of the Council is to promote and support basic and applied research in all areas of science, technology, medicine and the humanities. Important goals include raising the general level of the understanding of research in society as a whole and supporting innovation in all sectors and branches of industry.

The economic resources for research within medicine and health in the public sector have several sources. The main sources are the Ministry of Education and Research and the Ministry of Health and Care Services. These two ministries are also the main sources for the resources funding research within medicine and health through the RCN, 13% of the total budget.

The intention to collaborate with SALVE programme is on behalf of the Public Health Programme which is under the auspices of the RCN.

The priority thematic areas in the Public Health Programme are as follows

Social inequality

Social inequalities in health represent one of the welfare state's greatest public health challenges. Increased research in this area is also one of the recommendations emerging from the panel evaluation of community medicine, health science and psychology research. Differences in health related to educational level, profession and income are already great, and there are indications that they are on the rise. Clear social gradients have been documented for a number of health-related factors, including mortality, life expectancy, infant mortality, mental health, self-reported health, cancer, cardiovascular diseases, musculoskeletal disorders and accidents, as well as for indirect factors such as lifestyle-related habits (tobacco use, nutrition, and physical activity) and statistics on welfare benefits.

Although the extent of social inequalities in health is relatively well-documented in Norway, knowledge of the causes of health differences is rather limited. Other prioritised approaches in research include, for example, the significance of various factors in childhood and adolescence for health differences later in life, the significance of working environment for health differences, the significance of life phase for differences, ethnicity and the significance of contextual factors.

We know little about the anticipated effects of different types of interventions and more complex strategies targeted toward differences in health. For this reason, a third priority area focuses on studies of the effects of various types of measures. This is especially important in relation to major public health diseases where we know that the factors mentioned above (physical activity, nutrition, and diet) show a strong correlation to diseases such as obesity, diabetes and chronic obstructive disease, the latter in combination with smoking. The research approach must take into account the special challenges resulting from social inequalities and gender differences as these relate to the risk and development of disease.

Physical activity

Physical activity encompasses organised and informal sports and outdoor activities, as well as everyday physical activity. The importance of physical activity for somatic health has been well documented, but the causal connection between physical activity and mental health is more uncertain. The knowledge base for preventive measures, especially the factors that promote or hinder physical activity, is much more limited than desired. It is therefore important to strengthen research on the factors that increase the likelihood of initiating physical activity and for remaining physically active, and on factors that increase the risk of stopping or reducing the level of physical activity.

While knowledge about factors that affect physical activity in all population groups is important, it is especially vital in regard to persons of different cultural and socio-economic backgrounds, and in regard to groups for which it is known that changes in physical activity are especially great, such as during the adolescent years. Studies that help to explain the significance of physical activity for mental health and quality of life will fill a void in the current body of research. While it is possible to use a number of different methodological approaches to compile knowledge in this field, prospective cohort studies are especially suited for investigating these areas.

Measures designed to increase the level of physical activity of the population receive substantial financial support through organised sports activities and other means. It is important that intervention and evaluation research, especially studies that focus on new and

existing instruments for increasing the level of physical activity of the population as a whole and of particular groups, be conducted.

Nutrition and diet

Priority will be given to studies of measures designed to promote healthy eating habits (i.e. eating habits in line with Norwegian and Nordic recommendations for nutrition and physical activity). This includes studies of the implementation and effects of measures intended to promote health and prevent disease and cost-benefit analyses of these measures. Special priority will be given to studies in which diet is viewed in connection with the major public health diseases, including overweight/obesity, type 2 diabetes, cardiovascular disease, and cancer. Panel data is especially suitable for investigating these factors, in particular if these can be linked to existing health studies of the population and to register data. There is a special need for studies related to vulnerable groups, including groups with low socio-economic status and minority status. Finally, it is also of interest to investigate people's perceptions of dietary information and debate in the media and how this influences their thoughts and behaviour related to food and nutrition, including underlying socio-cultural views in the perceived and empirical relationship between diet and health.

Mental health

The programme will encompass research of significance for primary prevention and research on measures related to mental health.

We have some knowledge about the environmental factors underlying the development and persistence of various types of mental disorders, but much research remains to be done in this area. This is especially the case for research on risk and protection factors, early intervention, coping styles, and resilience. Several existing primary prevention measures are targeted toward mental health, but their basis in research is weak, both in terms of empirical knowledge of the development of mental disorders and in terms of knowledge of effective preventive measures. Systematic and controlled studies of preventive measures or their knowledge base, especially measures targeted toward the mental health of children and adolescents, will therefore be eligible for funding.

Some other areas significant to public health are also included, see programme plan www.forskningsradet.no/folkehelse

The Research Council of Norway (RCN) will support research in the thematic areas of the Norwegian Public Health programme. Consortium applications with a joint project description from Finnish and Norwegian researchers will have to be within thematic areas that are similar in the two programmes Public Health and SALVE. The RCN will only be able to fund 1-2 bilateral projects altogether.

5.1.1.3 United Kingdom

The UK Medical Research Council (MRC) is a publicly-funded organisation dedicated to improving human health. It supports research across the entire spectrum of medical sciences, in UK universities and hospitals, in MRC Units and institutes in the UK, and in MRC Units in Africa. The heart of MRC's mission is to improve human health through world-class medical research. To achieve this, we support research across the biomedical spectrum, from

fundamental lab-based science to clinical trials, and in all major disease areas. MRC work closely with the UK National Health Service and the UK Health Departments to deliver its mission, and gives a high priority to research that is likely to make a real difference to clinical practice and the health of the population.

Through this programme, Finnish and UK collaborative research teams can apply jointly for funding for bilateral projects (multilateral projects will also be considered but there must be a Finnish partner in all applications). The MRC contribution will only pertain to the project component that is carried out in the UK. To support UK collaborative elements, MRC has allocated £50,000 per annum for four years to support a maximum of 2-3 awards. The MRC will provide funding for projects in our priority areas of 'Public Health' and 'Lifelong Health and Wellbeing' which maps onto the 'Life-course approaches and critical periods of life' theme of this initiative (see Section 4.2).

5.2 Timetable

The application process takes place in one stage. The evaluation will be performed by international expert panels. In addition, the applicants have the opportunity to submit a written reply to the evaluation statement.

- The call for applications will be published on 3 December 2007
- The online services open on 2 January 2008
- The deadline for applications is **25 April 2008**. All Finnish teams shall submit their application form before the deadline; the deadline is strict
- An international panel of experts will execute the scientific evaluation of the applications during the summer of 2008
- Applicants are allowed to send to the Steering Group a written reply to the evaluation statement (see Chapter 6.4) within three weeks after the sending of the evaluation statement.
- Based on the scientific evaluation of the applications (taking into account the possible written replies of the applicant) and bearing in mind the objectives of the programme, the Steering Group will submit to the funding agencies its proposal on the projects to be funded
- At the Academy of Finland, the sub-committee appointed by the Academy Board will make the funding decisions in autumn 2008
- The projects may start as of the beginning of 2009

5.3 Steering of the programme

The Programme Steering Group consists of members of Academy Research Councils, representatives of other funding agencies involved in the programme and of expert members. Also other experts may be invited to the Steering Group's meetings.

The tasks of the Steering Group are:

- to steer and monitor the programme,
- to prepare the evaluation process of applications,
- to submit to the responsible funding agencies a proposal of the projects to be funded,

- to propose, when needed, to the Research Councils and other funding agencies supplementary application rounds and/or additional funding,
- to submit proposals on projects or project entities to be later incorporated into the programme as well as to decide on incorporation of a project or a project entity as part of the programme, provided that these already have funding for it,
- to plan and organise the final evaluation,
- to steer and support coordination of the programme,
- to promote the utilisation of the research results

5.4 Programme coordination

The programme will seek in all possible ways to support and promote the coherence of the research projects through active exchange of information and collaboration. The researchers in charge of the projects will be required to commit themselves to the objectives of the programme throughout the programme and during its evaluation. The researchers in charge of the projects shall:

- assume responsibility for and report on the scientific progress of the project (annual and final reports) and the use of funds according to the instructions of the programme coordination and relevant funding agencies;
- see that they themselves and the researchers funded through the programme participate in the meetings, seminars and workshops organised by the programme and facilitate exchange of information and cooperation between the research projects in the programme;
- take part in producing reviews, syntheses and information material around the programme; and
- actively disseminate information about the programme's progress and results on public and scientific forums.

The programme manager will work closely with the projects and facilitate the achievement of programme objectives. The programme manager will coordinate information and communications around the programme and promote research cooperation between the projects. Joint seminars, workshops, training courses and electronic communication will be used.

The research programme will be coordinated by the Academy of Finland in cooperation with other funding organizations.

5.5 Final evaluation of the programme

Upon its completion in 2013, the research programme will be evaluated by international experts, who will review its implementation and assess its outcomes and impacts. Among the aspects to be considered in the evaluation will be:

- accomplishment of the programme's objectives
- added value of the programme
- scientific quality of the programme outputs
- national and international cooperation
- researcher training and advancement of research careers

- scientific, societal and economic impacts pursued by the programme
- implementation of the research programme (planning, funding decisions, coordination, role of the Steering Group, joint activities)
- communication

The research teams receiving funding are required to report on the progress of their projects on an annual basis or in accordance with the Steering Group's decision, and submit a final report to the Academy of Finland upon the completion of the project. The reports shall indicate among other things the scientific publications produced as well as theses and doctoral dissertations completed within the programme.

The international evaluation board will present the results of the evaluation for publication after the evaluation is completed.

6 APPLICATION PROCEDURE AND CRITERIA FOR PROJECT EVALUATION

The call for applications for the Responding to Public Health Challenges (SALVE) research programme is open for applications from research teams based at universities or research institutes in Finland, Canada, Norway and UK. Project funding can be applied for by consortiums composed of at least two or more research teams. Only consortia including at least one Finnish Team will be funded through the SALVE programme. The application process takes place in one stage. Even though cooperation with Canadian, Norwegian or British research teams is no prerequisite for Finnish researchers to receive funding within the SALVE programme, such cooperation is particularly encouraged. Both bilateral and multilateral international joint projects will be funded with the exception that Research Council of Norway (RCN) will fund only bilateral Norwegian-Finnish projects.

One of the main objectives of the research programme is to promote cooperation across disciplinary boundaries and within and among research units as well as to reinforce cooperation between the scientific community and public authorities. Therefore, the projects should include multidisciplinary approaches, for instance, health and medical sciences in collaboration with biological, social and behavioural sciences and other disciplines.

The funded projects should form a relevant 'programme entity' and all projects are expected to cooperate with other project in course of the programme.

The call will open on 2 January 2008 and the deadline for submitting applications is 25 April 2008. The application deadline is strict. Applications shall be prepared in English. The Academy's online service and the procedure of how to submit an application are described in detail on the Academy's website, see www.aka.fi/eng > For researchers > How to apply > Guidelines > Guidelines on how to submit an application online.

Only consortium applications will be funded within the SALVE programme. A consortium is expected to share the same goals and objectives. The implementation of a consortium project requires the participation of all partners. A consortium has one joint research plan that also includes a joint funding plan for the whole consortium. **The consortium applications with the participating sub-projects are reviewed as one entity**, but funding can be allocated to

several different sites of research. Each partner in the consortium shall apply for funding for its sub-project by filling in its own application form. All requested appendices to a consortium application are appended only to the application of the consortium leader. The international collaboration partners will apply for funding for their sub-projects according to the specific guidelines (see 6.2). In the international consortium applications, (one of) the Finnish partner(s) will need to operate as ‘consortium leader’ for submission of the application to the Academy (see 6.2). The joint research plan shall include a brief introduction of each research team, the financial plan of the whole consortium, detail the share of work undertaken by each partner, the plans for collaboration within the consortium and the added value gained from the consortium. Separate guidelines for drafting consortium applications are available on the Academy’s website at www.aka.fi/eng/ > For researchers > How to apply > Guidelines > Detailed application guidelines > Consortia and project collaboration, consortium application. The SALVE programme has only one applications round, the applicants shall follow the guidelines on how to submit Full applications and appendices (no letters of intent shall be submitted).

6.1 Consortium projects from Finland

The leader of the consortium starts the submission of a consortium application to the Academy by registering the consortium into the online services. After registration, the sub-projects can start drafting their own applications. All appendices of a consortium application are appended to the application of the consortium leader. Other sub-projects submit only an online application without any appendices.

The registration of the whole consortium into the online services is done via the link in the list that opens after logging in. The consortium leader gives the name of the consortium, the abbreviation that describes it (e.g. acronym) as well as the responsible leaders and sites of the research of the sub-projects. After the consortium registration is submitted, the system immediately provides the consortium code number to be used in online applications (not the same as the application number). The consortium leader gives this code to the other consortium partners. The consortium code number links the different parts of the consortium to each other. The code shall be indicated in the applications (on *General description* page in the Finnish applications) of all sub-projects within the consortium.

All applications of the consortium shall be submitted online before the submission deadline. The application deadline is strict. If the application of any sub-project is submitted late, the application of the whole consortium is considered submitted late and will not be processed.

6.1.1 Application by consortium leader

- online application with which funding is applied for only for the consortium leader’s own research team.

Appendices:

- abstract drafted in accordance with the consortium guidelines, no more than one page (see 6.3.1)
- research plan drafted in accordance with the consortium guidelines, no more than 15 pages (see 6.3.2)

- curricula vitae for the consortium leader and the responsible leaders of the sub-projects, combined as one document, no more than four pages/researcher
- lists of publications of the consortium leader and the responsible leaders of the sub-projects, combined as one document (Instructions for lists of publications: <http://www.aka.fi/eng/> > For researchers > How to apply > Appendices > List of publications)
- statement by an ethics committee or the Committee on Animal Experimentation, if relevant
- progress report by the consortium leader and the responsible leaders of the sub-projects on their Academy-funded research projects for which no final reports have been submitted, combined as one document
- invitation by a foreign university or research institute, in case the research is conducted abroad

6.1.2 Application by a Finnish responsible leader of a sub-project of the consortium

- online application with which funding is applied for only for the research team of the responsible leader of the sub-project.

No appendices are to be appended to the application of the sub-project. The consortium leader collects and combines all appendices of the consortium as part of his/her application.

6.2 International joint projects

The Academy funds only the Finnish partners of a consortium by granting funding to the Finnish sites of research. The Academy's international partner (or partners) funds the other partners in the consortium. **In the international consortium, (one of) the Finnish partner(s) of the consortium is to be indicated as the 'consortium leader' who submits the joint application of the consortium to the Academy (see 6.1.1).** The other Finnish participants submit sub-project applications.

The international partners will apply for funding according to the guidelines given by the respective funding body and as indicated below. The relevant information on the foreign partner will be included in the appendices appended to the application to be submitted by the Finnish 'consortium leader' (e.g. curricula vitae and lists of publications; see 6.1.1, 6.3.2). The joint research plan describes the international joint project as a whole. The international partners should indicate the common code provided by the Finnish 'consortium leader' in their applications. This consortium code number links the different parts of the consortium to each other. Additional specific guidelines on how to apply for funding from different funding agencies are given below. Applicants for international joint projects are recommended to contact the responsible funding body before submitting their application. All applications of the consortium shall be submitted online before the submission deadline, 25 April 2008. This also concerns international partners excluding Norwegian applicants who apply for funding from the RCN (see below).

6.2.1 Finnish partners

The Finnish consortium leader shall follow the guidelines given in 6.1.1. In addition, separate applications forms, 'Application Form for International Joint Projects - SALVE' and 'MRC form – Special Contribution', shall be appended to the online applications of the Finnish consortium leaders for joint projects with teams from Canada and UK, respectively (see 6.2.2 and 6.2.4). These forms shall be appended under "Application form for international joint projects" in the online application.

The other Finnish participants submit sub-project applications (see 6.1.2).

6.2.2 Canadian partners

The applications of the Canadian partners shall be made on a specific application form 'Application Form for International Joint Projects - SALVE'. The application form is available on the programme's website at www.aka.fi/salveeng > Materials. This application form shall be appended as appendix to the online application of the Finnish consortium leader.

6.2.3 Norwegian partners

The Norwegian partners will submit their application with a joint research plan to the RCN. The deadline of the RCN is in June. All relevant information from the Norwegian sub-project shall, however, be included in the consortium leader's application to be submitted to the Academy by 25 April 2008 (see 6.1.1). Further guidelines on the RCN call will be updated on the programme's website at www.forskningsradet.no/folkehelse.

6.2.4 Applications involving UK-based collaborations

UK applicants who wish to submit a collaborative project as a theme or sub-study within a Finnish led consortium application should follow these instructions:

- The UK lead collaborator should complete the MRC form – Special Contribution. The application form is available on the programme's website at www.aka.fi/salveeng > Materials.
- This form should be attached as an Appendix to the main Finnish Application (see 6.2.1)
- The whole application should be submitted to the Academy of Finland by the Finnish Consortium Leader
- The whole application will be reviewed by The Academy of Finland and MRC funding decisions will be based on recommendations from the Academy of Finland.

Completion of the Special Contribution Form

The form has 3 main sections:

1. Applicants details
2. Details of Collaborative Project to be Undertaken
3. Justification for Request

1. Applicants details

Please enter the name of:

- the Principle UK Collaborator,
- the UK Department/Research Organisation
- Title of Application
- UK Collaborators e-mail address
- Duration of award, proposed start and end dates
- Electronic signature of Principle applicant

2. Details of Collaborative Project to be Undertaken

- Please enter the details of any other UK collaborators
- Please indicate briefly (max. 1 page A4) the collaborative project to be undertaken indicating key outputs.
- Please indicate briefly (max 0.5 side A4) how this project fits in onto the 'Life-course approaches and critical periods of life' theme of this initiative.

Justification for Request

- MRC will only cover costs incurred by the UK element of the collaboration. Only UK costs should be detailed in the form in the Section 'Justification for Request'
- All costs should be justified.
- The MRC applicants handbook details costs that can be claimed
<http://www.mrc.ac.uk/ApplyingforaGrant/ApplicantsHandbook/index.htm>

6.3 Guidelines on appendices to consortium application

In drafting consortium applications, the Academy's general guidelines on appendices shall be followed <http://www.aka.fi/eng/> For researchers > How to apply > Appendices unless otherwise separately mentioned.

6.3.1 Consortium abstract

The abstract, i.e. the summary of the research plan, shall be no more than one page in length and it shall include the key aspects of the project in the following order:

- responsible leader of the consortium and site of research
- leaders of the sub-projects of the consortium and sites of research
- name of the consortium and abbreviation used, names of the sub-projects, if needed
- objective and short description of the research of the consortium (summary of research plan)
- funding period, the total amount of funding to be applied for from the Academy (sub-projects specified) and amount of person-years within the project.

The abstract is appended to the application in the online services. Name the attachment file as follows: yoursurname_abstract.

6.3.2 Consortium research plan

The maximum length of a consortium research plan is 15 pages (Times New Roman 12 pts or corresponding). The plan shall include the following information:

1. Responsible leader and leaders of the sub-projects including sites of research
 - Name of the consortium, abbreviation to be used and names of the sub-projects, if needed.
2. Background
 - background and significance of the research nationally and internationally as well as previous research pertaining to the topic
 - how the consortium project ties in with other research of the leaders of the sub-projects or their research teams
3. Objectives
 - justification for how the proposed research ties in with the call and its objectives
 - research objectives
 - hypotheses
 - added value generated by consortium cooperation
4. Implementation
 - research methods and research material
 - timetable for research
 - ethical issues, research permits
 - financial plan for the whole consortium project, including funding applied for from each funding body, indicated by type of expenditure and by year, specified by sub-projects (in table form)
5. Researchers and research environment
 - members of the research teams of the sub-projects, their merits and tasks
 - research environment, including equipment
 - national and international cooperation and distribution of work relevant to the project: cooperation partners, form of cooperation, description of how the project benefits from cooperation
 - plan for the salary of the leader of a sub-project during the funding period, in case he/she does not have a permanent employment relationship
 - concrete description of research to be possibly carried out abroad, e.g. how the visit ties in with the research plan; objectives of visit and if the visit is already agreed.
6. Researcher training and research career
 - researcher training, including arrangements for instruction and supervision
 - doctoral studies within the research teams of the consortium
 - promotion of research careers and plans for researcher mobility
 - promotion of gender equality within the project
7. Expected research results
 - expected scientific and social impact

- possibility for scientific breakthroughs and for increasing the renewal of science and research
- applicability and feasibility of research results
- publishing of research results and increasing awareness among possible end-users, the scientific community and the general public

Funding can be applied for postdoc and predoc researchers, research costs, travel expenses, organising scientific meetings and for the promotion of researcher mobility, particularly between Finland, Canada, Norway and UK.

The research plan is appended to the application in the online services. Name the attachment file as follows: yoursurname_research plan.

6.4 Evaluation criteria

An international panel of experts will review each application on the basis of the scientific quality and the objectives of the programme (Chapter 3).

- All funded proposals must address objectives of the research programme
- The funded proposals must address an issue of (potential) public health importance and the results should be relevant to public health practice. Priority is given to research addressing effectiveness of specific policies and interventions, ideally with a randomised design, but encompassing also other interventional and comparative studies in accordance with the hierarchy of evidence
- The programme covers research utilising the opportunities provided by the Finnish infrastructure, such as biobanks, register data (in particular when combined with more detailed, in-depth assessments), as well as the development of new methods for usage of health information systems
- Multidisciplinary approaches sharing a focus, but providing diverse perspectives and integrating different phases of development and implementation of interventions are emphasised

Innovativeness is evaluated in terms of novel hypotheses, previously unavailable materials, as well as new methods and study designs and development of new theories and concepts.

The general criteria applied in the evaluation are the following:

- compatibility with the goals of the research programme
- scientific quality and innovativeness of the research plan
- impact of the research on society: public health relevance i.e. applicability and potential for utilisation
- feasibility of the research plan
- competence and expertise of the applicant and the research team
- the composition of the research team, which should be a balanced mix of senior researchers, postdoctoral researchers and postgraduate students
- national and international networks and added value generated through cooperation
- research and training environment

After the evaluation, the applicants are allowed to send the Steering Group additional information about the application on the basis of the evaluation. This response may contain clarifications and additions to the original research plan addressing specific criticism raised in the evaluation. The response (max. 2 pages) has to be returned within three weeks after the sending of the evaluation statement. On the basis of the statements received from the panel (taking into account the possible written replies of the applicant) and considering the objectives of the research programme and the appropriate programme entity, the Programme Steering Group will rank the applications and submit to participating funding agencies its proposal on the projects to be funded under the programme. In addition to the criteria listed above, each funding agency will apply its own criteria for funding (see Chapter 5.1). At the Academy of Finland, the final decision on the projects will be made by the sub-committee of the programme. In making funding decisions, the Academy considers the total funding and the commitments of the applicants, including the applications submitted by each applicant to this research programme.

7 FURTHER INFORMATION

Further information is available on the programme's website: www.aka.fi/salveeng

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