

Scientific Advisory Committee on Nutrition

**Paper for Information: Research on Diet and Nutrition
commissioned under the Department of
Health's Policy Research Programme**

Agenda Item: 6

Please see attached paper for information.

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Aims of the Policy Research Programme

1. The Department's Policy Research Programme (PRP) aims to provide through high quality research, a knowledge base for health services policy, social services policy and central policies directed at the health of the population as a whole. The PRP budget (in the region of £30m annual turnover) has to cover all of the Secretary of State's areas of responsibilities. There are a number of modes of funding including:
 - Initiatives, consisting of linked groups of projects providing a range of perspectives on a key policy issue;
 - Programmes of research in units and centres;
 - Single projects and literature reviews.
2. The PRP is prioritised, commissioned and managed as a collaboration between the Department's Research and Development Division and Departmental staff in other Directorates with policy responsibilities to ensure policy relevance. The priorities for the programme are determined by the following criteria:
 - Ministerial priority and relevance to the goals, aims and objectives of the Department of Health;
 - Size and importance of the problem/issue to be addressed in terms of actual or potential burden of disease or social condition;
 - Well-defined plans for introducing research results into current policy activity or the formulation of future policy;
 - Timeliness;
 - Feasibility of research;
 - Likely return on the investment in research;

- Appropriateness and availability of other research budgets, for example, those of non-Departmental public bodies such as the Public Health Laboratory Service.

The Department of Health Nutrition Research Initiative

3. In recognition of the importance of diet and nutrition in the prevention of cancers and CHD, the PRP set aside £2.4m in 1994/5 to fund a research initiative, encompassing priorities of particular relevance to improved nutritional health.
4. This initiative has since been shaped by a series of policy documents which have identified the role of diet and nutrition in the prevention of heart disease, stroke and cancers, overweight problems and obesity and, for example, in influencing bone density and the likelihood of the development of osteoporosis

Phase 1 of the Initiative

5. The Initiative's early projects [Phase 1, see Annex 1] now completed, were commissioned and managed jointly with the Medical Research Council. These projects focused on the relationship between nutritional factors and clinical outcome, in particular the role of diet and nutrition in the prevention and development of cancers and cardiovascular disease.
6. A series of reviews was also commissioned in collaboration with the then Health Education Authority, and focused on nutrition in the following target groups: namely women of child bearing age and those who are pregnant; infants up to one year of age and from one to five years old; ethnic minorities; and elderly people. The systematic reviews addressed opportunities for and barriers to dietary change, and effective interventions to promote healthier eating. The reviews on dietary change have been published on behalf of the Department as three reports in the HEA series on Opportunities for and Barriers to Good Nutritional Health whereas the reviews on promoting healthier eating have been published by the HEA in the series titled Health Promotion Effectiveness Reviews.

Phase 2 of the Initiative

7. Phase 2 of the initiative was commissioned in two parts and has included research on obesity, bone health and iron status, while focusing primarily on dietary change. Phase 2.1 comprised 9 projects, the majority of which were commissioned and managed jointly with the Medical Research Council (see Annex 2). A further 5 projects on dietary change

were commissioned and managed solely by the Department of Health (DH) under Phase 2.2 (see Annex 3). The general aim of this endeavour under Phase 2 was to move from an evidence base which describes the nutritional health status and patterns of nutrition for particular target groups to a situation of changed nutritional patterns which would contribute to improved health.

8. The *dietary change* projects were designed to evaluate in a variety of settings the effectiveness of interventions intended to achieve recommended dietary changes, both in terms of increased fruit and vegetable consumption and reduced fat consumption, with particular reference to low income groups. A joint workshop on *Dietary Change* was run with the Food Standards Agency (FSA).
9. The *bone health* projects were commissioned to better understand the impact of diet on bone mineralisation throughout life in the context of other important factors such as familial and genetic factors, sunlight exposure and physical activity. Another objective of these projects was to draw conclusions about the relative contribution of dietary factors for developing effective interventions to maximise bone mineralisation during adolescence and early adulthood and to minimise bone loss after menopause. A joint workshop on DH and FSA funded research on *Bone Health* was held.
10. Projects on *iron status* were commissioned to determine functional outcomes, such as work performance, cognitive function and physical activity, which are related to different markers of iron status in humans.
11. The early phase of the Nutrition initiative included a systematic review of effective interventions in the prevention and treatment of *obesity*, undertaken by the Centre for Reviews and Dissemination at York University. Under the second phase of the initiative applicants were encouraged to link nutrition with greater physical activity to identify effective interventions for different population groups. A small number of projects were funded which included : the development of a family-based intervention to prevent obesity in individuals at risk of non-insulin dependent diabetes mellitus; a systematic review of the characteristics of children who become obese adults; and as a follow-on to this review, a longitudinal analysis of the 1958 birth cohort which focused on childhood and adolescent predictors of adult obesity.

Physical Activity

12. The Nutrition initiative did not directly include research on *physical activity*, but physical activity was included as an important factor in several of the projects on obesity, bone health and iron status. In addition, physical activity is directly addressed in one of the systematic reviews in the series on barriers and facilitators to the health of young people commissioned from the EPPI-Centre .

Other nutrition research within the Policy Research Programme (outside of the Nutrition Initiative)

13. In addition to the projects funded under the Nutrition initiative, the Department is also funding a series of reviews at the Evidence for Policy and Practice Information Centre (EPPI-Centre, Institute of Education, University of London) on barriers and facilitators to the health of young people. This series of reviews includes evidence on interventions in healthy eating and physical activity and includes young people's views.

14. Two other health and diet projects have been funded through the PRP *Inequalities research initiative*. These comprise:

- a pilot study investigating the health impact (positive or negative) of a major food superstore development in a deprived urban neighbourhood;
- a study of infant feeding intentions, which aims to inform interventions for enabling disadvantaged groups to adopt breastfeeding with its associated health gains.

Overview for Policy and Practice

15. Research initiatives funded through the PRP are routinely time-limited and the Nutrition Research initiative is now coming to a close. All projects under Phase 2 are now completed, with the final project currently going through peer review.

16. In order to obtain the best value out of the programme overall for policy and practice, an overview of Phase 2 of the programme is being undertaken. The overview will pull together and highlight key messages for policy and practice.

17. As part of the dissemination strategy for the programme it is envisaged that this overview will be published as a supplement within a respected Nutrition Journal in order to reach the widest possible audience.

18. Within the PRP we will shortly be starting the planning round to identify new medium term research priorities which further Ministerial priorities. In addition to this planning cycle, we aim to respond to urgent R&D needs of Ministers and senior policy colleagues (through reviews, papers and single projects), as the need arises and subject to budget availability.

Annex 1

Projects commissioned in Phase one of the Nutrition Research Programme

Project title Principle investigator(s)	Aims and objectives	Publications Detailed references attached
The influence of childhood nutrition and nutritional status on mortality risk in adulthood Prof G Davey Smith and Prof. S Frankel, Social Medicine, Bristol	To explore the relationship between nutritional factors in childhood and health outcomes in adult life by obtaining cancer registration and death certificate data on 5,017 children aged up to 16 years who were examined during a survey of diet, social circumstances and health carried out between 1936 and 1940.	Project completed. See references 12,15,16,17 and 19.
Review of research on the measurement of child/adolescent fatness and long term health risks and childhood anthropometry and health status: a long term perspective Dr C Power, Institute of Child Health, London	To investigate the relationship between height and weight/height indices and both current and later health status at different stages of childhood and early adulthood using the national 1958 birth cohort, recently followed to age 33. To examine the influence of parental status and other important relationships, for example with birthweight and social circumstances.	Project completed. See references 20, 28 and 29.
Systematic review of randomised controlled trials of non-pharmacological dietary interventions to lower cholesterol Dr A Neil, Dr T Lancaster, Dr C A Silagy, Public Health and Primary Care, University of Oxford	To determine the effect of non-pharmacological interventions in lowering serum lipids relative to placebo and other lipid-lowering agents.	Project completed. See reference 33.

<p>Dietary fat, serum cholesterol, antioxidant vitamin status and cardiovascular mortality in the elderly</p> <p>Dr C Martyn and Dr C Cooper, MRC Environmental Epidemiology Unit, Southampton</p>	<p>The study aims to follow up a large cohort of elderly subjects selected from the general population in 1973-74 for a DHSS Survey of Health and Nutrition in the Elderly. The subjects completed a 7-day dietary record, underwent a detailed interview and were venesected for estimation of serum cholesterol and indices of vitamin status. Copies of death certificates will be obtained to study the association of baseline nutritional status with subsequent cardiovascular mortality.</p>	<p>Project completed. See references 13 and 14.</p>
<p>A study of the effects of dietary vitamin E supplementation on restenosis after coronary angioplasty</p> <p>Dr G A Ferns University of Leicester</p>	<p>The researchers propose to investigate the effects of dietary supplements of the antioxidant vitamin E on: monocyte function; platelet function; and clinical outcome, in patients undergoing therapeutic percutaneous transluminal angioplasty (PTCA) (a common form of therapeutic intervention for symptomatic coronary heart disease).</p>	<p>Project completed. See references 11 and 34.</p>

<p>A prospective population study of diet and chronic disease (European Prospective Investigation of Cancer-EPIC)</p> <p>Prof K-T Khaw, Prof N Day, Dr S Bingham, University of Cambridge</p>	<p>To part fund an existing prospective population study of 25,000 men and women aged 45-74 years resident in East Anglia as part of the European Prospective Investigation of Cancer (EPIC).</p> <p>Baseline data collection between 1992-1996 includes extensive dietary information using 7-day records, 24- hour recall and food frequency methods previously validated. Medical and family history, socio-economic variables, anthropometric and physiological measurements including blood pressure and respiratory function are also being collected, together with a urine sample, and a blood sample prepared and frozen at -70°C in 28 aliquots for later biochemical and nutrient assay.</p> <p>All participants are followed up through general practice records, cancer registry and death certification for significant clinical endpoints including cardiovascular disease, cancer and hip fracture incidence and total mortality by cause.</p> <p>The study will provide the ability to test concurrently several specific hypotheses concerning the relationship of specific nutrients (measured using both questionnaires and biochemistry) to specific outcomes; and to examine interactions between specific nutrients, foods and a variety of endpoints as well as overall functional health, including quantitative estimates of these relationships in different subsets of the population.</p>	<p>Project ongoing. See references 2, 3, 4, 23, 24, 25, 26, and 27.</p>
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<p>Nutrition, psychosocial factors and coronary heart disease in the Whitehall II Study (a prospective study which is part funded by DH)</p> <p>Prof M Marmot and Dr E Brunner, University College London Medical School</p>	<p>The aim of this study is to look at social variation in diet and its determinants, and ultimately the relationships of diet to coronary heart disease and CHD risk factors.</p> <p>This is a longitudinal study of social, psychological, behavioural and biomedical factors related to cardiovascular disease. 6,895 men and 3,413 women aged 35-55 years entered the study in 1985-88. In 1991-93 data were collected which included 7-day diary of food intake, FFQ, antioxidant status (plasma vitamins C, E and carotenes and in a sub-sample, serum cholesterol ester fatty acids), waist and hip circumferences.</p> <p>The aim of this part of the study is to: examine variations in dietary intake using measures of socio-economic status i.e. employment grade, housing tenure, father's social class, financial hardship; investigate psychosocial determinants of dietary pattern, including education level, health beliefs and attitudes such as self-efficacy and locus of control, study the relation of dietary pattern to coronary risk and its precursors: overweight, central obesity, insulin resistance, hypertension and unfavourable lipid and clotting factor profile, and thereby to estimate the contribution of diet to social variations in coronary risk.</p>	<p>Project ongoing. See references 1, 5, 6, 7, 8, 9, 10, 18, 21, 30 and 31.</p>
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<p>Antioxidant status and ischaemic heart disease in the Caerphilly Study (a prospective study which is funded by a number of funding bodies)</p> <p>Prof. J J Strain and Prof D Thurnham, University of Ulster</p>	<p>To examine the relationship between ischaemic heart disease (IHD) incidence and age-adjusted baseline antioxidant measurements using univariate and multiple logistic analyses. Results expected at the end of the duration of the project relate only to interpretation with respect of prevalent data. Association of results obtained in the proposed project with incident data must await an adequate follow-up period of 5 years.</p> <p>It is proposed to obtain data on a broad spectrum of blood antioxidant measurements from around 2,000 subjects in phase III of the Caerphilly prospective heart disease study. These subjects were sampled during 1989-93 and plasma and washed erythrocytes have been stored at -60°C. Antioxidant measurements will include plasma vitamin E and α- and β-carotene together with other carotenoids such as lycopene, β-cryptoxanthin and lutein. Activities of the antioxidant enzymes, plasma caeruloplasmin and erythrocyte superoxide dismutase, glutathione peroxidase and catalase, will also be measured. These data will be combined with other data from the Caerphilly cohort for the final data analysis.</p>	<p>Project completed. See references 22 and 32.</p>
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Annex 2

Projects commissioned in Phase 2.1

Project title/ Principal Investigator	Aims and objectives	Publications Detailed references attached
<p>A systematic review of the characteristics of children who become obese adults</p> <p>Dr S Logan Systematic Reviews Training Unit Institute of Child Health, London</p>	<p>Objectives: To systematically review the literature to:</p> <ol style="list-style-type: none"> 1. Define the individual, family and social factors in childhood associated with adult obesity. 2. Identify any critical periods of childhood associated with adult obesity. 3. Consider the implications of the review findings in terms of future research and policy for the prevention of adult obesity. 	<p>The project is completed and final report has been peer reviewed and finalised. See references 1, 2 and 3.</p>
<p>Child and adolescent predictors of adult obesity, a longitudinal analysis of the 1958 birth cohort</p> <p>Dr C Power Epidemiology & Public Health, Institute of Child Health</p>	<p>Aim: To determine whether childhood factors, specifically physical activity, psychological factors, birthweight and infant feeding method, influence the development of adult obesity. To estimate effects of these factors on adult body mass index (BMI) at 33 years, taking account of potential confounding factors, such as parental BMI and socio-economic status. These aims are designed to fill important research gaps identified in a recent systematic review "Childhood predictors of adult obesity".</p>	<p>The project is completed and final report has been peer reviewed and accepted. See references 4 and 5. Other papers are in preparation.</p>

<p>The development of a family-based intervention to prevent obesity in a high risk group</p> <p>Dr N Wareham Department of Public Health and Primary Care, Cambridge University, Cambridge</p>	<p>Aim: To develop a family-based programme to prevent weight gain in individuals at risk of non-insulin dependent diabetes mellitus (NIDDM). The specific aims were:</p> <ol style="list-style-type: none"> a) To review the psychological and sociological models that could underpin a family-based behavioural intervention. b) Through a series of multidisciplinary meetings and consultations, to develop a family-based diet and physical activity intervention for the prevention of obesity in people at risk of NIDDM. c) To select the appropriate health care setting and methods for delivering the proposed intervention. <p>Specific objectives: To carry out three systematic literature reviews:</p> <ol style="list-style-type: none"> a) interventions aimed at the prevention of obesity or weight gain b) interventions applying the Theory of Planned Behaviour c) In addition, an exploratory review was carried out in relation to family-based interventions to reduce health risks with an emphasis on cardiovascular disease and cancer prevention. <p>To hold focus groups with diabetic patients and their offspring to discuss recruitment and the programme. To develop a theoretically-based programme and a framework for testing its feasibility in a practical setting.</p>	<p>The project is completed and final report has been peer reviewed and accepted. See references 6 and 7. A third review is in submission.</p>
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<p>To what extent can energy and fat consumption be estimated from supermarket receipts? (The Supermarket Nutrition Information Project – SNIP)</p> <p>Dr J Donnelly & J Ransley Public Health Nutrition Unit, Trinity & All Saints College of University of Leeds</p>	<p>Aims: A feasibility study to validate the use of itemised checkout receipts to estimate the fat and energy intake of individual households and to assess the mean fat and energy intake of a population group, who purchase most of their household food from supermarkets.</p> <p>Objectives:</p> <ol style="list-style-type: none"> 1. To estimate the fat and energy composition of food purchased from supermarkets using itemised till receipts. 2. To estimate the fat and energy composition of household food intake using four-day weighed intakes (WI) and food frequency questionnaires (FFQ). 3. To compare the three measures of intake at the: <ul style="list-style-type: none"> • Individual household level • Population level. <p>This is Phase 1 of a project to investigate the question “Can supermarket receipts be used to achieve a reduction in total fat consumption .</p>	<p>The project is completed and the final report has been peer reviewed and accepted. See references 8, 9, 10, 11, 12 and 13.</p>
<p>The association of low iron stores with general health in the Health Survey for England</p> <p>Dr Primatesa Department of Epidemiology & Public Health University College London Medical School</p>	<p>Aim: To carry out a secondary analysis of the Health Surveys of England (1993 and 1994) to investigate the association of Hb, serum ferritin and the combination of both, with several measures of physical and mental health in the general adult population of England (> 16 y) and in population sub-groups at high risk of iron deficiency anaemia (pre-menopausal women and the elderly).</p> <p>Objectives:</p> <ol style="list-style-type: none"> 1. To assess the association of haemoglobin (Hb) and serum ferritin (SF) levels (and their combination) with measures of general health, minor psychiatric morbidity, long and short-standing illness, and physical activity; 2. To attempt at defining cut-offs for Hb and SF that would best describe individuals with impaired physical and psychological functioning. 	<p>The project is completed and final report has been peer reviewed and accepted. No papers or abstracts have been published yet.</p>

<p>Longitudinal changes in iron stores, cognitive function and physical activity in British adolescent girls.</p> <p>Dr M. Nelson Department of Nutrition & Dietetics, Kings College London 1/10/97 – 30/9/99</p>	<p>Aims:</p> <ol style="list-style-type: none"> 1. To follow-up a cohort of 600 girls initially aged 11-15 years attending three London comprehensive schools who were first screened for iron deficiency anaemia (IDA) and iron deficiency (ID) in 1995/96 to investigate whether anaemia in adolescent girls is primarily a transient or a persistent phenomenon; 2. To quantify the extent to which the duration and the severity of anaemia compromise learning and physical activity; and 3. To assess the relative effectiveness of two approaches to tackling anaemia in adolescent girls. <p>The objectives:</p> <ol style="list-style-type: none"> 1. to reassess iron status in the original cohort of 600 girls two years after the initial screening; 2. to ascertain whether any observed changes in iron status can be explained in terms of dietary, anthropometric, physiological and socio-economic factors; 3. In a subset of 140 girls: to assess changes in cognitive function and activity levels in relation to changes in iron status over two years; 4. In the original 600 girls plus 400 new recruits 11-12 years old: to conduct a 3 month intervention trial to improve iron status, comparing two strategies: referral to GP (high-risk girls identified by capillary blood screening) versus school-based nutrition education (population approach); and <p>To assess whether any improvements in iron status following the intervention is reflected in improvements in cognitive function and physical activity.</p>	<p>The project is completed and final report has been peer reviewed and accepted. See reference 14.</p>
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<p>Intervention to maximise bone mineralisation in adolescents: the benefits of calcium and exercise for 16-18 year olds.</p> <p>Dr Ann Prentice MRC Human Nutrition Research, Cambridge 1/8/97 – 30/6/2001</p>	<p>Aim: To determine, by means of a carefully-designed intervention protocol, whether advising young people aged 16-18 years to increase their calcium intake and exercise levels is an effective means of maximising bone mineralisation.</p> <p>For logistic reasons the Cambridge Bone Study is being conducted in two separate but identical phases; one in girls and one in boys. The intervention phase in girls started in September 1995 and was separately funded. This part of the study covers the intervention trial for boys and the follow-up measurements on both girls and boys.</p> <p>Objectives:</p> <ol style="list-style-type: none"> 1. Carry out an intervention study lasting 12-15 months in boys: a randomised double-blind trial consisting of four groups: calcium±exercise, placebo±exercise. (The daily calcium supplementation to consist of 1000 mg Calcium and the exercise intervention to consist of three 45 minutes exercise work-outs per week with a trained instructor.) 2. Measure change in bone mineral status by dual energy X-ray absorptiometry (DXA) of the whole body, and at a number of sites in the spine, hip and forearm, and by ultrasound of the os calcis. Collect blood and urine for biochemical and genomic markers of bone metabolism. 3. Follow-up measurements on both girls and boys to be made at 12-18 months after the end of the interventions. 	<p>The project is ongoing. Due to be completed in March 2003. An interim final report has been peer reviewed and accepted. See references 16,17,18,19, 20, 21 and 22.</p> <p>The follow-up study of boys is still ongoing as is a second follow-up of girls. A second final report is due in March 2003, which will provide data on the boys follow-up.</p> <p>A paper from the girls intervention study has been submitted for publication .See reference 22.</p>
<p>Assessment of nutritional, physical activity and genetic factors influencing peri-menopausal bone loss</p> <p>Prof. David Reid Department of Medicine and Therapeutics University of Aberdeen</p>	<p>Aims and objectives:</p> <ol style="list-style-type: none"> 1. To examine relationships between nutrients and both bone mass and bone loss rates in peri-menopausal and early menopausal women. 2. To study the interaction between genetic factors (genotypes of the COL1α1 gene, vitamin D receptor and oestrogen receptor), physical activity, and diet, on markers of bone health. 3. To make provisional recommendations as to lifestyle changes beneficial to bone health, and/ or vitamin supplementation for those with a genetic predisposition to osteoporosis. 	<p>The project is completed and final report has been peer reviewed and accepted. See references 23, 24 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 24, 38, 39.</p>

<p>Dietary and other determinants of bone density, change in bone density, and hip fracture: a prospective population-study</p> <p>Prof. K-T Khaw Institute of Public Health University of Cambridge</p>	<p>This is part of the European Prospective Investigation of Cancer and Chronic Disease (EPIC). The aim is to:</p> <ol style="list-style-type: none"> 1. Examine longitudinally and quantify the relationship between diet, other lifestyle factors including smoking and physical activity, and biochemical markers in 25,000 men and women aged 45-74 years who were seen between 1992 and 1996 and subsequent fracture incidence. 2. Examine and quantify the association between dietary factors, other lifestyle factors including physical activity, biochemical markers, and calcaneal ultrasound bone measurements in 21,000 men and women aged 45-74 years at baseline who will be reassessed in a follow-up visit between 1997 and 2000. <p>The main follow-up is being funded by MRC, DH, MAFF and others.</p>	<p>The project is completed and final report has been peer reviewed. Data collection and analyses will continue after this report.</p> <p>See references 40, 41 and 42. Other papers are in preparation.</p>
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Annex 3

Projects commissioned in Phase 2.2

Project title / Principal Investigator(s)	Aims and objectives	Publications Detailed references attached
<p>Teaching children from deprived social backgrounds, food preparation using healthy foods as a means of improving their diets and the diet of the family</p> <p>Dr Paula Moynihan, Dr Ashley Adamson and Rosie Stacey University of Newcastle Annie Anderson, University of Dundee</p>	<p>Aim: To evaluate the effectiveness of a school-based dietary intervention programme (Food Club) based on teaching school children, from deprived social backgrounds, practical food preparation skills.</p> <p>Objectives: To run the practical interactive intervention (an after school Food Club) in 5 schools, with an additional 5 schools acting as controls over 20 weeks (September to April). To measure the impact of the intervention on: the intake of fruits vegetables and starchy foods by the subjects (children aged 11-13 years); the percentage of energy intake from saturated fatty acids, total fat, carbohydrate (CHO), non-milk extrinsic sugars (NMES) in the diets of the subjects; the amount of fruit and vegetables and starchy foods in one weeks food purchases by the families of the children who participate in the study; the amount of energy derived form saturated fatty acids, total fat, CHO, NMES in one weeks food purchases by the families of the children who participate in the study; beliefs, attitudes and knowledge of 11-13 year-old children, and their parents, relating to fruits and vegetables and starchy foods; knowledge, perceived confidence and perceived skills about food preparation and cooking; Measure the cost of the intervention and to ascertain which components of the intervention are perceived to have been the most effective in facilitating (or preventing) change.</p>	<p>The project is completed and final report accepted. See references 1,2,3,4,5 and 6. Further papers are in preparation.</p>
<p>Promoting dietary change in low income communities: Assessing the feasibility of dietary interventions in general dental practice</p>	<p>Aims: To examine the feasibility of using dental practices as the setting for dietary interventions within the UK and to identify the most appropriate approaches to employ for the benefit of the population overall and for low income consumers in particular.</p>	<p>The project is completed and final report accepted. See references 7 and 8. A further paper is under preparation.</p>

<p>Professor Annie Anderson University of Dundee and Dr Cynthia Pine, University of Liverpool</p>	<p>Objectives: To review published work on dietary intervention approaches which might be transferable to general dental practice. To ascertain the nature of routine dietary advice currently provided in General Dental Practice. To examine the acceptability of a range of dietary intervention approaches with dental staff. To identify potential barriers (including perceived knowledge) to the provision of dietary advice in dental settings and willingness of dentists to participate in such activities. To identify the resources necessary for the implementation of dietary interventions in primary dental care. To examine the views of adults about receiving general dietary advice in dental practices and gauge desire to change dietary habits.</p>	
<p>A randomised controlled trial of behaviourally-orientated dietary counselling with low income adults</p> <p>Professor Andrew Steptoe St George's Hospital Medical School (now Royal Free and University College Medical School, London)</p>	<p>Aim: To evaluate a behaviourally-orientated dietary counselling programme designed to increase fruit and vegetable intake in an ethnically mixed low-income population.</p> <p>Objectives: Adaptation and testing of the behavioural counselling programme and piloting outcome measures. (Recruitment of participants and introduction of the intervention (with 2 and 8 week reinforcement, and 6 and 12 months follow-up) as a randomised controlled trial in a primary care setting; Assessment of the effects on the fruit and vegetable consumption (in the form of a FFQ and serum creatinine, total cholesterol, plasma vitamins C and E and α-carotene, urinary potassium, sodium and creatinine.)</p>	<p>The project is completed and final report accepted. See references 9 and 10.</p>
<p>Use of plasma flavonol measurements as a biomarker for dietary flavonoid intake in a clinical trial of an intervention to increase fruit and vegetable intake</p> <p>Dr Andrew Neil University of Oxford</p>	<p>Aim: To examine the use of plasma flavonol measurement as a biomarker of dietary flavonoid intake in a clinical trial of a primary care intervention to increase fruit and vegetable consumption.</p> <p>Objectives: To measure total flavones and quercetin in 600 baseline and 600 six-month non-fasting plasma samples with equal number of intervention and control. To examine the use of flavonol measurements and to compare (correlate) plasma concentrations of flavonols with plasma concentrations of antioxidant vitamins (α-tocopherol, α- and β-carotene, lycopene, β-cryptoxanthin, lutein, and ascorbic acid,</p>	<p>The project is completed and final report accepted. See references 11 and 12.</p>

	after adjustment for cholesterol concentrations, where appropriate.	
<p>Randomised Control Trial of the effect of increasing dietary folate on homocysteine, blood pressure and lipids in a high-risk population in Primary Care</p> <p>Dr Barrie Margetts and Prof Alan Jackson, University of Southampton</p>	<p>Aim: To assess whether practical food based dietary changes introduced in a primary care setting can lead to an increase in folate intake, increased blood folate and reduce the levels of blood homocysteine in high risk subjects based in primary care. Hypothesis: That doubling folate intake will lead to a 3 µmol/l reduction in blood homocysteine levels in men at high risk of heart disease. Objectives: To build on three existing and funded projects that explore different aspects of the determinants of blood homocysteine. To add the assessment of changes in serum and red blood cell folate to the assessment of dietary changes (focusing on low salt, low fat and high fruit and vegetables and higher fibre) on blood pressure and lipids. To measure changes in carotenoids, flavonoids and homocysteine levels in blood in the same subjects. To carry out MTHFR thermolabile variant typing to assess genetic polymorphisms for enzymes that control homocysteine metabolism.</p>	<p>The project is completed and a final report has been prepared. No publications as yet.</p>

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