NHS
National Institute for Health Research

BIOMEDICAL RESEARCH UNIT ANNUAL REPORT

2013/14 Financial Year

Note: The accompanying *NIHR Biomedical Research Units – Guidance on Completion of Annual Reports for 2013/14 Financial Year* contains essential guidance on the information you need to provide when completing this proforma. Please complete the form using a font size no smaller than 10 **point (Arial).**

1. UNIT DETAILS

Name of the NIHR Biomedical Research Unit:

The NIHR Biomedical Research Unit in Nutrition, Diet and Lifestyle at the University Hospitals Bristol NHS Foundation Trust and the University of Bristol

Contact details of the individual to whom any queries on this Annual Report will be referred, and to whom feedback on the annual report will be sent:

Name: Dr Vanessa Marshall

Job Title: Bristol Nutrition BRU Manager

Address: Education and Research Centre, Upper Maudlin Street, Bristol BS2 8AE

Email: vanessa.marshall@bristol.ac.uk

Tel: 0117 342 1750

2. DECLARATIONS AND SIGNATURES

Contact details of the NHS Organisation administering the NIHR Biomedical Research Unit award:

Name: University Hospitals Bristol NHS Foundation Trust

Address: Trust Headquarters, Marlborough Street, Bristol, BS1 3NU

Name of the Chief Executive of the NHS organisation:

Robert Woolley

I hereby confirm, as Chief Executive of the NHS organisation administering the NIHR Biomedical Research Unit award, that this Annual Report and the Financial Report have been completed in accordance with the guidance issued by the Department of Health and provides an accurate representation of the activities of the NIHR Biomedical Research Unit:

Signature …….. **Date:** ……

(Chief Executive)

3. OVERVIEW OF ACTIVITIES (no more than two pages)

Progress against objectives:

The Bristol Nutrition BRU has been open for two years. We have made significant progress with our short term objectives and have also made progress with our medium term objectives which we have outlined in the sections below. We continue to expand our staff numbers and budget savings across year two will allow the appointment of a data assistant to work on the increasing volume of information being obtained from BRU projects.

Progress with leadership, governance and management arrangements:

The management and reporting structure of the Bristol Nutrition BRU are firmly established, adhering to the executive group terms of reference. Our executive group comprises the director (Andy Ness), deputy director (Julian Hamilton-Shield), two other theme leads (Richard Martin and Ashley Cooper), and the unit manager (Dr Vanessa Marshall). It meets every two weeks. The executive group receives advice from our scientific advisory board which had its inaugural meeting on 2nd October 2013.

Research themes provide formal reports to the unit's executive group. These are then collated into a quarterly update report that is tabled at meetings of the NHS trust's research group and at equivalent research groups in the two university faculties across which the unit operates.

Top three achievements:

Core Methodology
A key strength of the Bristol Nutrition BRU has been setting up and expansion of our core methodology team who provide co-ordinated support across all themes. Our core team offers mentorship and practical support in data management, systematic reviewing, statistics and qualitative methodology. Our core team provide expertise to support the work of the specific research themes, develop research in other areas and coordinate unit activities such as training, patient and public involvement and public engagement. Our patient and public involvement policy can be found at http://www.uhbristol.nhs.uk/research-innovation/bristol-nutrition-bru/patient-and-public-involvement/ and our public engagement policy can be found at http://www.uhbristol.nhs.uk/research-innovation/bristol-nutrition-bru/engagement/.

Training and development
We have made training, development and support for all our staff and students a priority. Dr Charlotte Atkinson is our training lead. We have developed a comprehensive training policy and supported innovative training activities. In January 2014 we conducted a staff survey of career development, training, life balance and culture. The results of this survey were positive and have been discussed with staff. Our positive approach to women in the workplace has been recognised by the award of an Athena SWAN silver award to our host school and one of our partner schools: the School of Oral and Dental Sciences and the School of Social and Community Medicine, respectively. Our training policy can be found at http://www.uhbristol.nhs.uk/research-innovation/bristol-nutrition-bru/training/

Projects and publications
We now have over 50 approved projects across all our five research themes, with further projects in development. We have now recruited 1,050 participants across these studies. The details of these are listed in the Finance and Activity Report submitted with this report and on our website, http://www.bristolnutritionbru.org.uk . We have published 11 papers over the last year and have a number of manuscripts in preparation.

4. PROGRESS MADE IN EACH RESEARCH THEME (no more than one page per theme)

PROSTATE CANCER RESEARCH THEME

Progress against specific objectives detailed in the original application

We have made progress against all our pre-specified objectives as described below:

- **Systematic review** – we are finalising our systematic review of the effect of physical activity and dietary interventions on the progression of prostate cancer, for submission for publication in 2014.
- **Mendelian randomization** – we are completing our analyses of the effect of adiposity, height, lipids and the insulin-like growth factor (IGF) system on prostate cancer and its progression based on 25,000 cases and 25,000 controls from the PRACTICAL consortium. Our analyses to date suggest that the association of IGF-I with prostate cancer is causal, but the magnitude of the association is lower than that estimated from meta-analyses of observational studies. We will submit papers for publication in 2014.
- **Observational data analysis** – we are conducting a secondary analysis of data from the Prostate Testing for Cancer and Treatment (ProtecT) study to investigate changes in BMI, alcohol consumption, smoking prevalence and physical activity in men pre and post prostate cancer diagnosis.
- **Qualitative studies** – we have conducted qualitative interviews to explore the acceptability of dietary and physical activity interventions in men (n=17) undergoing radical prostatectomy and radiotherapy for prostate cancer, their partners (n=7) and health care professionals (n=10). Interviews have been transcribed and analysis is ongoing; papers will be submitted for publication in 2014.
- **Feasibility study** – we have obtained NHS ethics approval for a feasibility study of a physical activity and dietary intervention in men post radical prostatectomy. The trial will open at the end of June 2014. Trial logistics are being finalised; for example training of research nurses, organising the lab to receive samples, and developing trial databases. This study will assess the acceptability, compliance, tolerability and delivery of the intervention; recruitment, randomisation and retention rates; and quality of life.
- **Strategy development** – we have convened and maintained a steering committee for the prostate cancer theme. The steering committee meets regularly and contributes to the ongoing development of the research.
- **Clinical cohort study** – we have designed and received NHS ethical approval for a cohort study to obtain biological samples to investigate the impact of dietary changes, micronutrients and increased physical activity on disease biomarkers, in collaboration with Professor Jeff Holly.
- **Biomarker studies** - we designed a study to assess the effect of lycopene and green tea extract on targeted lipid and amino acid metabolites in men at high risk of prostate cancer.

Progress with leadership of the theme

The research area is led by Professor Richard Martin and Dr Athene Lane from the School of Social and Community Medicine, supported by Dr Lucy Hackshaw (Research Associate). A steering group of clinicians (urology, oncology), laboratory and population scientists, and qualitative researchers has been set up and meets on a quarterly basis. We have convened a prostate cancer Patient and Public Involvement group, involving six prostate cancer survivors.

Details of the progress of research area strategy, including any changes (eg, discontinuation of originally planned work, or new areas of research)

There are no changes to the originally planned work but we have expanded our work to include work in the new areas listed below.

- Is aberrant tumour IGF_II expression a prognostic biomarker for prostate cancer progression and is this related to a poor lifestyle?
- Can exercise alter defined markers of metabolism and progression in the tumour tissue of people post -prostatectomy?
- Examination of the effect of dietary and physical activity behaviours on prostate biology
- Developing a theoretical understanding of exercise and dietary behaviour in men with and without prostate cancer

Examples of effective translation, or significant progress along the translational pathway

Most of our studies are now underway, and we have started collecting data. We have presented preliminary findings at conferences and we are drafting full papers. The research to date has informed the development of the feasibility trial which is about to open to recruitment.

Examples of the creation and development of intellectual assets

- To date, no intellectual assets have been created or developed through the work of the theme.

PERI-OPERATIVE NUTRITION RESEARCH THEME

Progress against specific objectives detailed in the original application

Objective 1: Systematically review the literature on pre-operative feeding and update existing reviews on early post-operative feeding and sham feeding.

- We are conducting a Cochrane review on gum chewing and post-operative recovery and updating the early post-operative feeding Cochrane review (a Cochrane review on pre-operative feeding is being conducted by others). The search strategy for the gum chewing review has been completed, and the protocol has been published. The literature review has been done (although regular searches are still being conducted), and most data extraction and assessment of risk of bias has been completed. Data analysis is underway, and the manuscript is being drafted. All data for updating the early post-operative feeding Cochrane review have been obtained and the manuscript is in preparation.

***Objectives 2 and 3: Assess current practice in Southwest centres on pre-operative feeding regimes in patients undergoing upper and lower GI surgery, and assess current practice in Southwest centres regarding post-operative feeding and develop interventions to encourage early post-operative feeding*.**

- We are conducting two qualitative interview studies. The first aims to explore the experiences of perioperative nutrition in people undergoing colorectal surgery. The second aims to gain an understanding of the experiences, practices and contexts of healthcare providers (HCP) towards the enhanced recovery programme, with a focused enquiry on nutritional elements of the programme. Both studies have received ethics approval and are underway.
- Patient experience study: all interviews (n=16) been conducted and transcribed, and over half have been coded in NVivo. Data from medical notes (for context) are currently being extracted.
- Healthcare providers study: interviews with HCP from two hospital wards (head and neck and thoracic) and other relevant individuals have been conducted (total to date = 18) and some (n=5) have been transcribed and coded in NVivo. We anticipate that we will conduct eight interviews with HCP on the colo-rectal ward.

Objective 4: Extend these studies to other relevant patient groups e.g., head and neck cancer patients undergoing treatment and patients undergoing cystectomy.

- The second qualitative study (described above) aims to understand the experiences of healthcare professionals in three different surgery contexts: colorectal, head and neck, thoracic. This will provide an understanding of the culture and networks of these three differing settings and any shared values, expectations and norms.

Progress with leadership of the theme

- The research area is being led by Dr Charlotte Atkinson, under the guidance of Professor Andy Ness. We have set up a steering group chaired by Dr Atkinson that includes clinicians, research associates and our PhD student that meets monthly to review progress with the theme. Dr Atkinson is supported by Dr Georgia Herbert (Research Associate). Dr Herbert is currently on maternity leave so we have appointed Dr Caroline Taylor as a research associate to provide maternity cover.

Details of the progress of research area strategy, including any changes (eg, discontinuation of originally planned work, or new areas of research)

- We are using data from an NIHR RfPB funded trial on the effect of chewing gum on paralytic ileus to look at potential predictors of when a person begins eating again after colorectal surgery. In addition, we are also using the data to look at eating as a predictor of outcome (e.g., length of hospital stay, complications, etc.). A total of 411 patients were recruited to the trial and data analysis is currently underway.

Examples of effective translation, or significant progress along the translational pathway

- At this stage, projects within the peri-operative theme are ongoing; therefore, there is limited progress along the translational pathway at this time.

Examples of the creation and development of intellectual assets

- To date, no intellectual assets have been created or developed through the work of the theme.

CHILDHOOD DISORDERS RESEARCH THEME

Progress against specific objectives detailed in the original application

- **FADES study**: Website and recruitment goes live 12th June. The study was portfolio adopted by the CRN. Application for £100,000 to JDRF innovative grant- Microbiome research. Outcome of application to be announced June/July 2014.
- **Using functional Magnetic Resonance Imaging to assess the impact of Mandolean training on the neural control of obesity in young people: an exploratory study for the Bristol Nutrition BRU.** Study continuing, recruitment nearly completed. This study has formed the basis of a Wellcome Trust Research Fellowship application by Dr Elanor Hinton (part-time RA funded by BRU).
- **BPSU facilitated surveillance of acute pancreatitis in children under 15 years**. Active recruitment finished in May 2014 (as planned). > 90 definite cases reported to study. Preliminary analysis shows associations with mumps and gall-stones (secondary to obesity) that are consistent with pre-specified hypotheses. One year follow up phase to estimate complications is underway.
- **Feasibility study of the Long term health outcomes of Children with Congenital Diaphragmatic Hernia.** User advisors in place. Outcome measures have been finalised with psychologist. Protocol is written and REC permissions in place. Study recruitment started 1 April 2014.
- **Does physical activity and fitness influence glycaemic control and insulin requirement in children and adolescents with Type 1 diabetes?** Study completed. Currently being written up for projected submission to Diabetic Medicine. Estimated date submission – September 2014
- **Feasibility assessment of the potential for using a cutaneous, skin temperature sensor to identify hypoglycaemia in the sleeping child with diabetes.** All ethics, R&D, SOPs in place. Anticipated arrival of new devices Mid-June 2014 (Cambridge Temperature Concepts)**.**
- **Diet, physical activity and sedentary behaviour in adolescents in the JUMP Type 2 diabetes cohort.** Awaiting ethics approval from Birmingham to obtain e-mail addresses for cohort to undertake dietary assessment using MYFOOD24 (In collaboration with Professor Cade (University of Leeds).
- **BPSU survey of Type 2 Diabetes in UK & Eire in children under 17 years.** Working with RCPCH to get additional PPI before going active with this study. Ethics application underway.
- **Investigating a role for Insulin Growth Factor-II in adipocyte regulation.** Study using operative biopsies of children's fat facilitated by BRU. Final ethics amendments submitted June 2014..
- **Enhancing Avon Longitudinal Study of Parents and Children (ALSPAC) dietary data to characterise the size, frequency and timing of consumption in relation to genetic, diet quality and health.** The project has been approved by the ALSPAC executive and is now underway.
- **Eating behaviour measurement using the mandometer – A pilot study in ALSPAC (BRU facilitated project: Research Nurse investigator paid by BRU in 2014).** Completed n=91. Preliminary data presented American Nutrition Society meeting San Diego 2014.

Progress with leadership of the theme

This theme is led by Professor Julian Hamilton Shield. He is supported by Ms Laura Birch (Research Associate) and Dr Georgina Williams (Clinical PhD Student). Dr Williams is due to go on maternity leave at the end of July. We have arranged internal cover for her work.

Details of the progress of research area strategy, including any changes (eg, discontinuation of originally planned work, or new areas of research)

Several new projects are underway.

- **Treatment of Barth syndrome by CARDIOlipin MANipulation (CARDIOMAN): A randomised placebo-controlled pilot trial conducted by the nationally commissioned Barth Syndrome Service -** we are in negotiation with the EME board: the final award will be around £440,000.
- **Pilot study to evaluate the performance of the DNA Genotek Stool Collection Kit** – we will compare with standard stool self-collection kits.Ethics approval has been obtained.
- **BioScan 920-II -2 (Maltron UK) in managing childhood fluid balance and measuring body composition –** this is an industry collaboration with Maltron UK. The project is in the planning phase but likely to include fluid balance in paediatric renal disease and diabetic ketoacidosis.
- **NIHR Fellowship application –** Ms Laura Birch has submitted a project entitled 'An exploratory, multiple methods study to understand what developing cystic fibrosis related diabetes (CFRD) means to young people with cystic fibrosis (CF) and to evaluate the effectiveness and acceptability of dietary manipulation to improve their glycaemic control'. .

Examples of effective translation, or significant progress along the translational pathway

At this stage, projects within the childhood theme are ongoing; therefore, there is limited progress along the translational pathway at this time.

Examples of the creation and development of intellectual assets.

None

TYPE 2 DIABETES THEME

Progress against specific objectives detailed in the original application

The **overall aim** of this theme is to develop interventions to reduce or modify sedentary behaviour in people with type 2 diabetes, and to investigate the feasibility of using these interventions in randomised controlled trials (RCTs). The **specific objectives** of this theme are to**:**

- Identify key determinants of sedentary behaviour that are amenable to modification
- Develop interventions to reduce sedentary time and interrupt prolonged bouts of sedentary behaviour
- Pilot these interventions in people with type 2 diabetes
- Determine the feasibility of the interventions as measured by recruitment rates, tolerability, rates of treatment adherence, trial compliance and retention
- Measure changes in the volume and pattern of sedentary behaviour using novel technology and determine how these are associated with changes in metabolic and anthropometric characteristics independently of changes in diet and physical activity

The strategy to achieve these objectives comprises work in six areas. We describe progress below.

- ***Systematic review -*** we have conducted a systematic review of the evidence for the association between objectively measured sedentary time and metabolic outcomes. The manuscript is in the final stages of preparation and we expect to submit this in July 2014.
- ***Efficacy of modifying sedentary time on change in metabolic outcomes -*** we have designed a study to investigate the effect of interrupting sedentary time by standing and walking on the blood glucose level of office workers. Interstitial glucose levels will be measured using a continuous blood glucose monitor, to look at both glucose level and variability. The study has received ethical approval and Bristol University has given permission for the study to take place on its premises. Recruitment will start soon. Preliminary studies have explored the utility of both the blood glucose monitoring and the use of ActivPAL accelerometers to provide an objective measurement of sit/stand transitions.
- ***Evaluation of instrumentation to measure sedentary behaviour***. - we have established a study called STAMP-2. We will measure habitual physical activity with an accelerometer, sedentary time with an activPAL inclinometer, dietary intake with a 3 day food diary and sedentary behaviours, travel patterns with questionnaires in 500 people with newly diagnosed type 2 diabetes. Fasting blood samples are being taken for a range of metabolic outcomes. Measures of sedentary time will be compared between the accelerometer and activPAL. Sedentary behaviours and sedentary time will be compared with food diaries to determine whether sedentary behaviour is associated with dietary behaviours. Physical activity, sedentary behaviour and diet will be investigated with regard to metabolic profiles of the participants. STAMP-2 has received ethical approval from the Bristol NHS REC. We are currently recruiting in Bristol, Taunton and Birmingham.
- ***Qualitative investigation of sedentary behaviour***. – we plan to start qualitative studies in Autumn 2014, using participants recruited from the STAMP-2 study. These studies will explore potential intervention approaches to reducing or interrupting sedentary time, focusing on the barriers and facilitators of active travel (walking and cycling). Qualitative analysis of transcripts from the Early ACTID RCT are underway to explore the determinants of physical activity behaviour change.
- ***Novel methodology for measuring time outdoors***. - we have developed methodology to objectively measure time and physical activity outdoors by integrating accelerometers with global positioning system (GPS) data. Participants within the STAMP-2 study (described above) will wear accelerometers and GPS receivers so we can describe the spatial mobility of this population.
- ***Feasibility of intervention to target sedentary time***. - work on the feasibility study will start as the results of the ongoing studies become available.

Progress with leadership of the theme

- The research area is being led by Professor Ashley Cooper and Dr Angela Page from the Centre for Exercise, Nutrition and Health Sciences, School for Policy Studies, and is supported by Dr Catherine Falconer (Research Associate).

Details of the progress of research area strategy, including any changes (eg, discontinuation of originally planned work, or new areas of research)

We have expanded our work to include the new areas listed below:

Metabolomics - Metabolic profiling of stored samples from the Early ACTID RCT will be analysed by the Intergrative Epidemiology Unit at the University of Bristol in order to identify changes in small-lipid subfractions as a result of the diet and physical activity intervention.

Examples of effective translation, or significant progress along the translational pathway

- At this stage, projects within the diabetes theme are ongoing; therefore, there is limited progress along the translational pathway at this time.

Examples of the creation and development of intellectual assets

- None

CORE THEME

Progress against specific objectives detailed in the original application

Objective 1 - Training in nutritional research methods for clinicians and non-clinical scientists to strengthen research in nutrition in clinical populations

We have a designated training lead (Dr Charlotte Atkinson), a dedicated training budget, a training policy and a comprehensive and innovative training programme for our staff. We have recently completed a survey of staff in the unit. The results were broadly positive and are helping us to further improve training we offer. Our training is described in detail in the section below.

Objective 2: Identify further interventions for clinical populations translated from observational studies and transferred from trials in primary care and the general population

Our core theme is carrying out experimental research projects not included in any of the specific themes to help identify further interventions for clinical populations.

- ***Folic acid in pregnancy and all cause and cause-specific mortality: further follow up of the Aberdeen folate trial -*** we previously reported higher breast cancer mortality in women randomised to receive folic acid in pregnancy. We have completed a further record linkage follow and completed preliminary analysis. Further analysis of cancer registry data are underway
- ***Aberdeen Folic Acid Supplementation Trial: Follow up of offspring*** – We are working with the MRC Integrative Epidemiology Unit to assess the feasibility of following up the offspring born to mothers in this trial and measuring their epigenetic profile on saliva samples***.*** We have obtained ethics approval and the relevant research agreements. The study has just started recruiting.
- ***An ethnographic study of food choices in public areas of a sample of UK NHS hospitals*** – this project assessed the feasibility of collecting information of the quality and price of food available in the foyers of NHS hospitals in the south west of England. We have completed the project.
- ***Omega-3 fatty acids and depression in adults: a Cochrane review*** – in this review we are focusing on people with clinical depression. Our Cochrane protocol has been published. We have run our searches, selected studies and are now extracting data.
- ***Systematic review of animal and human studies of low energy sweeteners on appetite and obesity*** – we are working with academic and industry partners under the auspices of the International Life Sciences Institute (ILSI) Europe to systematically review animal and human studies have reported on energy sweeteners. We have completed our searches, study selection, data extraction and meta-analysis. We have prepared a draft manuscript that is currently with authors.
- ***Effects of nicotine challenge on eating topography*** – we are planning to examine the effect of nicotine on eating in collaboration with the MRC Integrative Epidemiology Unit and the Nutrition Behaviour Unit in the School of Experimental Psychology.

Objective 3: Multidisciplinary research capacity for each of the areas

Our core team provides co-ordinated methodological support across all themes. Our core team offers mentorship and practical support in data management, systematic reviewing, statistics and qualitative methodology. Our core team is also supporting patient and public involvement and public engagement and is described in the relevant sections below.

Progress with leadership of the theme

Professor Andy Ness leads this theme. He is supported by Dr Vanessa Marshall and other members of his Lifecourse Epidemiology and Population Oral Health Group. The methodological team comprises Dr Chris Penfold (statistics), Dr Rachel Perry (systematic reviews), Dr Aidan Searle and Dr Eileen Sutton (qualitative methods) and Mr Stu Toms (data management). The team report on a monthly basis to the executive group.

Details of the progress of research area strategy, including any changes (eg, discontinuation of originally planned work, or new areas of research)

We have continued our work as planned and run the projects described above.

Examples of effective translation, or significant progress along the translational pathway

None to date

Examples of the creation and development of intellectual assets

None to date

5. PATIENT AND PUBLIC INVOLVEMENT AND ENGAGEMENT (no more than one page)

PATIENT AND PUBLIC INVOLVEMENT

The Bristol Nutrition BRU is committed to patient and public involvement (PPI). We have a PPI lead (Dr Eileen Sutton) who has developed our policy, PPI group terms of reference and role descriptions that have been approved by the executive group and are reviewed annually. The PPI lead oversees PPI, provides regular reports to the executive group and works with themes to advise on PPI and help establish and run dedicated theme-based PPI groups. Two groups (Prostate Cancer and Perioperative Health) are now active and meeting regularly to provide advice to our researchers. In the coming year we plan to form an additional PPI advisory group comprised of representatives from each of the theme-based PPI groups to advise the BRU Management and Scientific Advisory groups on BRU PPI policy.

The prostate cancer PPI group is now established and has five active group members. They are prostate cancer survivors who vary in age, stage of cancer, time since diagnosis and treatment type. Group members attended an initial training session and now meet every 3 to 4 months. So far the group has provided feedback on study documentation (information sheets, consent forms, topic guides) and recruitment methods for research being conducted by the theme Research Associate and PhD student. One of the group members also took part in a practice interview with our PhD student. A peri-operative health PPI group is also established with 4 active members recruited from people who have undergone colorectal surgery in the local Trust. Group members have attended training and provided feedback on study materials for the Perioperative Nutrition theme Research Associate and PhD student. They have provided useful feedback to a Colorectal Clinical Nurse Specialist on the feasibility of a proposed nurse-led follow-up scheme in the local Trust. They have also commented on ideas for future research in the theme.

The PPI lead and BRU research dietician hosted a meeting of local researchers involved in children's research on in October to discuss coordinating and pooling resources with regard to PPI with children/parents. It was agreed that rather than setting up a new PPI group attendees would explore working together with existing groups, sharing resources and expertise. In the coming year the PPI lead will work with the Research Associate from the type 2 diabetes theme to set up a PPI group for this theme, recruiting from participants in an ongoing study. The PPI lead is carrying out a review of PPI in the BRU. A report on the evaluation will be submitted to the Executive Group. We anticipate that this evaluation will help us to improve PPI in our research. The PPI lead and theme research associates have had an abstract accepted for the 2014 INVOLVE conference.

PUBLIC ENGAGEMENT

Rachel Perry was appointed as Public Engagement Lead in 2013 and has developed an engagement policy that has been approved by the executive group. The policy was developed with support from the University of Bristol Centre for Public Engagement (CPE). The policy outlines work in four key areas:

- **Supporting University strategy and engagement activities** - we will work with the University and Trust to support their strategy and centrally organised engagement activities (for example we ran a stall in the Trust for the National Clinical Trials Day). The unit will also support the work of other groups such as The University of the West of England Science Communications Unit (SCU).
- **Staff training –** we will identify relevant media training courses and ensure unit staff are aware of these and work with the CPE to run a half day workshop on engagement for unit staff
- **Leading engagement activities** – We will continue to run a seminar series open to the public and other specific engagement activities. Examples of Engagement activities include devising an interactive nutrition and physical activity game 'How'd you like them apples' which has been accepted onto the programme at Einstein's Garden as part of the annual Green Man Festival and Professor Julian Hamilton-Shield appeared on Channel 4 Dispatches. The title of the programme is "Tricks of the junk food business" aired at 8pm on Monday 2nd June 2014. The Schools project we reported on last year is ongoing but has been delayed as it has been a challenge to find time in the curriculum of our partner school. We hope to take this forward in the next school year.
- **Monitoring and reviewing engagement activities**. The policy will be reviewed and updated annually. The engagement lead monitors engagement activities and training and reports regularly on progress to the executive team.

Please also describe how you make patients and the public aware of the research being undertaken within your Unit, and signpost them towards appropriate information about participating in research.

The PPI and engagement policies are available on the BRU website along with details of the seminars and ongoing projects.

6. TRAINING (no more than two page)

We have a formal training policy and a training lead – Dr Charlotte Atkinson. Our policy describes training activity and opportunities in five areas (http://www.uhbristol.nhs.uk/research-innovation/bristol-nutrition-bru/training/). These are described below, along with highlights of some of the training that has been undertaken by staff and students in the past year.

1. Students and placements

- *Studentships*: The BRU has three non-clinical and one clinical PhD studentships but also hosts and part funds other postgraduate students.
- *Internships*: These are aimed at post-graduates looking to obtain experience in the areas of scientific research administration or clinical trial management. The BRU has one intern on a 12 month contract.
- *Dietetic research training*: The BRU has a designated dietician liaison who is currently looking into options for a dietician 'exchange' scheme whereby dietician(s) from the trust gain research experience at the BRU in exchange for a BRU dietician doing clinical sessions.

2. NHS and University Training

- *Generic / core training*: All BRU staff and students have been encouraged to attend generic and core training courses offered by the Trust and University of Bristol. In the past year, staff and students have attended courses in areas such as Endnote, Access, and the staff review process.
- *Good Clinical Practice (*GCP) and other mandatory training: All BRU staff and students have access to mandatory training such as GCP training courses.
- *Short Courses*: These courses are run by the School of Social and Community Medicine at the University of Bristol (UoB), and cover a range of health services research and epidemiological methods, as well as generic research skills. In the past year, sixteen places on these courses have been funded by the BRU.

3. NIHR Training

- *NIHR training opportunities:* All BRU staff and students who are part or fully funded by the NIHR have the opportunity to take advantage of the various courses and training meetings offered by the NIHR. One of our PhD students attended the NIHR summer school residential course in June 2013.

4. BRU Internal Training and Staff Review

- *Reading Group*: The BRU runs a reading group to which all staff and students within the Unit may attend. Key basic methodological texts are covered over several weeks and provide a platform for learning and discussion away from day to day tasks. In the past year we have read and discussed 'Nutritional Epidemiology' by Walter Willett and have had a series of discussions on qualitative work based around specific articles / book chapters.
- *Present and Discuss*: All BRU research staff and students attend and contribute to regular Present and Discuss meetings. These provide an informal platform to talk about current work or previous work, lessons learned from prior work, or to practice a conference / other presentation. In addition, at a recent Present and Discuss session we fed back on the Unit survey that was conducted at the beginning of 2014 and gathered additional feedback from staff and students.
- *Research Methods course*: All BRU staff and students have access to training on research methods. Dr Sam Leary (Senior Lecturer in Statistics) has developed a series of e-lectures and three associated 2-hour tutorials. This course was run for staff and students from May – July 2013, and e-lectures are available year-round.
- *Training Days*: Training workshops will be run with support from additional University and Trust groups, including the Research Design Service, Research and Innovation and the Press Relations team.
- *Team Building and Away Days*: The BRU will from time to time run Team Building Events and Away Days to further encourage cross-Unit interactions and to allow a more strategic discussion of topics related to the Unit. For example, we went to a local charity called the Square Food Foundation where we cooked our own Christmas dinner.
- *Travel and Conferences*: BRU staff and students are encouraged to attend relevant national and international scientific meetings.
- *Staff Review*: All staff are encouraged to meet regularly with their line manager / key colleague, and to undergo formal staff review once a year.
- *Co peer review*: Senior staff will be encouraged to co peer review manuscripts with junior staff.

5. BRU Open Training

- *Seminar Programme*: The BRU runs a formal CPD accreditable seminar programme. Seminars are held approximately every two weeks during term time and include both internal and external speakers.
- *Workshops*: The BRU will develop and run workshops covering areas such as nutrition research methods. BRU staff and students, as well as external researchers, will be able to attend these workshops. We are currently in the planning stages for a workshop titled 'Nutritional Epidemiology – An introduction to issues in analysis and interpretation of dietary data'.
- *Sabbaticals and visiting fellows*: An agreement has been reached between the BRU and the Institute for Advanced Studies (IAS) at the UoB regarding support for BRU Sabbaticals. These are run through the IAS, with one of a proposed two annual sabbaticals being funded by the IAS subject to them being competitive. We are currently hosting Professor Loc Do on a three month visit from the University of Adelaide.

As shown above, the training within the BRU covers a broad range of areas and, as such, aims to develop staff in all clinical and non-clinical professions. We have a named Training Lead (Charlotte Atkinson) along with a dedicated training budget, and we encourage staff and students to take advantage of the opportunities available to them. At the beginning of 2014 we conducted a survey of staff and students within the BRU, and some questions were specifically about training. The findings of the survey showed that: staff and students have undertaken 'about the right amount' of training, all of which was viewed to be relevant to their everyday work; there don't appear to be many issues in terms of access to training, and most people felt that they had enough time for training; most did not want additional training opportunities to those already offered through the BRU; and staff reviews are deemed to be helpful, and training needs are often identified through the staff review process.

- **Specific training plans for the BRU**

In the next year we plan to update our training policy based on the feedback obtained from staff and students, strengthening staff reviews to improve career guidance and CV support, as well as developing specific guidance on attendance at conferences and courses.

- **Ongoing or planned collaborative training, secondment or networking with other parts of the infrastructure.**

We have met and shared ideas with the training lead at our local BRU (Bristol Cardiac BRU) and with BRU/Cs with an interest in nutrition and physical activity (Leicester/Loughborough and Southampton). Leicester/Loughborough provided a BRU/BRC training course open to all BRU/BRC staff which members of the Bristol BRU attended and Southampton BRC funded a Bristol BRU PhD student to attend the week-long, residential Intercollegiate Course in Human Nutrition run by the Academy of Medical Royal Colleges and taught by Southampton BRC investigators. Bristol Nutrition BRU are planning a course on analysis of diet data, open to all BRU/BRC staff.

7. LINKS WITH INDUSTRY (no more than two pages)

Professor Julian Hamilton-Shield has taken on the role of Industry liaison lead and is working to extend and strengthen our industry collaborations. We have established the following links with industrial partners:

- **Testing a new medical device** – we are working with Cambridge Temperature Concepts (Cambridge) to further refine a novel device, in the second stage of development, that can alert families who have a child with diabetes to the occurrence of hypoglycaemia whilst sleeping at night. This is awaiting ethical approval.

- **Evaluation** - We are planning a pilot study to evaluate the performance of the DNA Genotek Stool Collection Kit compared to a standard stool self-collection kit for microbiome analysis. Ethics approval has been obtained and the study is to be undertaken mid-late June 2014.

- **Sustainable weight loss regime** – we are in early stage discussions with Community Sports Projects regarding the development of pilot studies for a sustainable weight loss programme.

- **Joint training opportunities** – we have agreed an internship programme with Nutricia. Our intern (Rhona Beynon) is going to spend three months at Nutricia.

- **Research seminars** - David Mela from Unilever and Kate Ashman from Nutricia gave seminars as part of the BRU Nutrition, Diet and Lifestyle Seminar Series.

- **Prevention of acid reflux** – we are in discussion with AVR Medical regarding a novel technique for the prevention of acid reflux. The invention was devised specifically to benefit patients of oesophageal motility disorders. We are due to meet to discuss the innovation and potential collaboration.

- **Bio-engineering collaboration** – we are partners in the SPHERE **(**Sensor Platform for HEalthcare in a Residential Environment) project - an EPSRC, an inter-disciplinary research collaboration with industrial partners. We are working with the team on diet and physical activity measures and helping with PPI.

We have two new collaborations that are in the set up stage:

- **Health kiosks** – we are working with Wellpoint, a company who have developed a range of health kiosks which can be set up in the workplace or community to enable monitoring of wellbeing. We have negotiated having a kiosk situated in the foyer for a month's trial gathering data from staff members. This will also be a collaboration between the Bristol Nutrition BRU and Leicester/Loughborough BRU who are running a similar trial.

- **Paediatric body composition and fluid status** - We are signing a non-disclosure agreement with the SME Maltron, for a month's reliability trial of their paediatric Bioscan 920-II-P in collaboration with Wesley Hayes, a nephrologist at the Bristol Children's Hospital.

7.2 Please indicate the total number of UK Small and Medium Enterprises (SMEs) you have worked with during financial year 2013/14 and provide brief details of key examples.

We have worked with one SME - Cambridge Temperature Concepts.

7.3 Please provide details of; i) any new strategic partnerships between your Unit and industry during financial year 2013/14 ii) the progress of ongoing strategic partnerships between your Unit and industry during financial year 2013/14.

None

7.4 Please provide brief details of key examples of studies active in financial year 2013/14, as follows:

None

7.5 Please provide the number and key examples (including names of funder/grant schemes) of any partnerships or studies with industry which have led to further industry, public or charity research funding, including as part of consortia.

None

7.6 Please provide the number of Agreements signed with industry during financial year 2013/14 and provide brief details of key examples, as follows:

Number of agreements signed with industry:	
Non-Disclosure Agreements	0
Model Trial Agreements including mICRA and mCTAs	0

8. LINKS WITH OTHER NIHR INFRASTRUCTURE (no more than one page)

The Bristol Nutrition BRU has built up a network of UK Collaborations, including Aberdeen, Birmingham Bournemouth, Cambridge, Leicester, Leeds, Manchester, Plymouth, Southampton and Taunton.

Professor Andy Ness meets regularly with Professor Gianni Angelini (Bristol Cardiac BRU) and Professor Andrew Dick (NIHR Biomedical Research Centre -Ophthalmology) to discuss strategic plans for collaboration to share good practice in management, training, statistics, systematic reviews, qualitative research, data management, bio-storage, potential joint projects and are planning a joint workshop. Professor Andy Ness has had initial discussions with Dr Maria Pufulete in the Cardiac BRU regarding a potential joint BRU project in pre-surgical care.

The Bristol Nutrition BRU is working together with the Leicester Loughborough Nutrition BRU and the Southampton BRC to explore opportunities for joint training programmes. We meet three times a year, rotating the location between the three groups to share plans, progress and policies. This gives managers, training and PPI leads the opportunity to exchange ideas. Leicester/Loughborough provided a BRU/BRC training course open to all BRU/BRC staff which members of the Bristol BRU attended and Southampton BRC funded a Bristol BRU PhD student to attend the week-long, residential Intercollegiate Course in Human Nutrition run by the Academy of Medical Royal Colleges and taught by Southampton BRC investigators. Bristol Nutrition BRU is planning a course on analysis of diet data, open to all BRU/BRC staff.

We received an NIHR Rare Diseases award for diet, physical activity and sedentary behaviour in adolescents in the Jump Type 2 diabetes cohort.

We are also hosting NIHR Rare Disease Translational Research Collaboration research fellow - Ethan Sen – who will be working on nephrotic syndrome. His supervisor Professor Moin Saleem is now a BRU affiliate.

Please also outline any strategic plans for increasing engagement with these NIHR Infrastructure schemes.

We will continue to meeting with our local BRU and BRC and with the nutrition BRU and BRC to further develop collaboration. We will also aim to work closely with CLAHRC West, hosted by University Hospitals Bristol NHS Foundation Trust. This opened on January 1st 2014 and offers opportunities to strengthen our link to ongoing and new applied research.

9. IMPACT IN HEALTHCARE PROVISION (no more than one page)

Please list any significant new work showing how your Unit is translating its work into practice for the benefit of patients within your Trust and influencing its translation further afield; you may also summarise on significant developments in examples reported previously.

The Bristol Nutrition BRU has supported some policy relevant systematic reviews- for example a meta-analysis into non-sugar sweeteners and fish oil and depression.

We have also carried out commissioned evaluations. For example, we carried out telephone interviews with attendees (completers and non-completers) of the MEND paediatric weight management programme.

Please also describe examples of work which has significant potential to improve patient outcomes or experiences in the future, setting out how the Unit plans to ensure that these potential benefits are achieved.

We are supporting two multidisciplinary partnerships (called Health Integration Teams – HITs) in children – the Bristol Network for Equality in Early Years Health and Wellbeing (BoNEE) HIT and in making neighbourhoods healthier - Supporting Healthy Inclusive Neighbourhood Environments (SHINE) HIT

We anticipate that our relationship with the newly awarded CLAHRC West will further strengthen our links to applied research.

10. OTHER COMMENTS (no more than one page)

Please use this space to provide us with any other information you would like to highlight, or comments you would like to make.

New Grant Funding

The Bristol Nutrition BRU has supported several successful applications for new grant funding. These are listed below

1. Sensor Platform for Healthcare in a Residential Environment (SPHERE) - £12 million EPSRC. PI – Ian Craddock.
2. Biostore Development - £175,000 David Telling Charitable Trust. PI – John Armitage. The BRU is a key stakeholder in this process.
3. JUMP Type 2 Diabetes Cohort - £20,000 NIHR Rare Disease Call. PI – David Goldblatt. Julian Hamilton-Shield is leading the BRU involvement.
4. Qualitative evaluation of child weight management intervention - £7,900 North Somerset Council (now completed). PI – Andrea Waylen. The BRU was a joint partner in this study, providing staff expertise for field work.
5. Professor Andy Ness has been awarded a Senior Investigator Award from the NIHR.
6. Partnership for Improvement and Innovation in Dietary Assessment Technology ("PIIDAT") MRC MICA award ref: MR/L02019X/1. Janet Cade is PI. Andy Ness is a co-applicant.

This form, together with the BRU Financial & Activity Report and an Added Value pro forma (using the structured template provided) must be submitted, by email, no later than **1pm on Thursday 12 June 2014** to Sonja Tesanovic (sonja.tesanovic@nihr-ccf.org.uk).

A signed copy of this report should be sent no later than **Thursday 19 June 2014** to:

Dr Sonja Tesanovic
NIHR Central Commissioning Facility
Grange House
15 Church Street
Twickenham, TW1 3NL