



**UKCRC Public Health Research Centres of Excellence**

**4th Annual Conference**

**Abstracts for posters**

**1. The effect of dance mat exergaming systems in Secondary Schools: A pilot pragmatic non-randomised cluster controlled trial.**

**Dr Liane Azevedo, Fuse: Centre for Translational Research in Public Health**

***Abstract***

We made use of a natural experiment to examine the effect of introducing dance mat systems into public secondary schools using a clustered non-randomised controlled trial design. We recruited participants from five schools in intervention districts (n=280) and two schools in neighbouring control districts (n=217). Data were collected at baseline and 12 months follow-up. There was a possibly positive effect of the intervention on BMI [mean difference “0.9 kg/m<sup>2</sup> (90% confidence interval -1.2 to -0.5)], percentage of body fat [-2.2% (-3.6 to -0.4)] and psychological well-being [2.5 (0.5 to 4.4)]; and a likely positive effect on autonomy and parent relation [4.2 (1.9 to 6.5)] and self-efficacy for physical activity [0.9 (-0.1 to 2.0)]. There was a likely negative effect of the intervention on some physical activity parameters [moderate to vigorous physical activity -9.5 min/day (-8.6 to 0.5); total physical activity “77.7 CPM (-129.0 to -26.4)]. However, compliance with accelerometer data at follow-up was poor. Implementation of the dance mats exergaming intervention was associated with improvement in BMI and body composition, some parameters of health-related quality of life and self-efficacy. However, the mechanism of these benefits is unclear as there was insufficient data on physical activity at follow-up to draw firm conclusions.

**2. The Northern Ireland Public Health Research Network - What (if anything) have we learned so far?**

**Dr Eimear Barrett, Centre of Excellence for Public Health Northern Ireland**

***Abstract***

Reflections on the first year, what has been achieved and plans for moving forward

**3. Chronic Conditions Prevalence Tool: a tool for policy-makers and public health practitioners to describe the distribution of chronic conditions in populations and to explore 'what if..?' scenarios.**

**Steve Barron, Other (please state) Institute of Public Health in Ireland**

***Abstract***

Chronic health conditions are responsible for substantial mortality and reduced quality of life. In 2012 The Institute of Public Health in Ireland (IPH) published estimates and forecasts of the prevalence of chronic conditions: hypertension, diabetes, chronic airflow obstruction, stroke, coronary heart disease and musculoskeletal conditions. The estimates and forecasts are based on risk models of nationally representative health survey data in Northern Ireland and the Republic of Ireland. The risk models identify significant multivariate predictive factors for each condition and estimate the risk of having the condition for each level of the predictive factors.

IPH has developed a web tool that allows you to apply these risk models to a population that you define. The population could be a real local area or a hypothetical population to explore 'what if?' scenarios of different population size and distribution of the predictive factors. This useful tool can support the planning and delivery of prevention and management services.

The Chronic Conditions Prevalence Tool is available at the Chronic Conditions Hub of the Health Well website <http://chronicconditions.thehealthwell.info>.

**4. Mental Health and well-being of Polish migrants in Northern Ireland.**

**Dr Justyna Bell, Centre of Excellence for Public Health Northern Ireland**

***Abstract***

The poster will exhibit some preliminary results of the study in mental health and well-being of Polish migrants in Northern Ireland. It will focus especially on presenting the main themes which emerged in expert interviews with professionals working with Polish migrants with mental health problems.

## **5. DietComplyf Study: baseline characteristics and dietary intake.**

**Dr Sarah Brennan, Centre of Excellence for Public Health Northern Ireland**

### ***Abstract***

The DietComplyf study is a prospective cohort of UK breast cancer patients designed to investigate the association between phytoestrogen intake and event-free survival. The aim of this study is to examine dietary intake in this cohort by prognostic factors. Information on pathology/treatment was obtained and lifestyle and diet (FFQ) was self-reported 9-15 months post-diagnosis. FFQs were analysed using the CAFÉ nutritional analysis program. Intakes of 28 nutrients and percentage energy contributions from food groups were calculated. Dietary intake was compared by tumour grade, nodal status and breast cancer subtype. In total, 3157 patients provided data for analysis. Women with grade 1 breast cancer reported lower percentage energy from fat than women with grade 3 breast cancer ( $p=0.01$ ). Those with positive nodal status reported higher intakes of vitamin C, folate, fibre, vitamin A retinol equivalents and vegetables but lower calcium intake (all  $p=0.01$ ) than women with no nodal involvement. Women with triple negative breast cancer reported a higher intake of polyunsaturated fatty acids ( $p=0.02$ ) and vitamin E ( $p=0.01$ ) than other breast cancer subtypes. Inconsistent differences in dietary intake were observed by prognostic factors. This contrasts with some literature which suggests that prognosis influences dietary intake amongst early stage breast cancer survivors.

**6. Increasing levels of obesity have signalled a need for dietary change.**

**Hannah Brown, Centre of Excellence for Public Health Northern Ireland**

***Abstract***

Increasing levels of obesity have signalled a need for dietary change. Food choice is a fundamental factor in weight control and front of pack nutritional food labelling (FoPL) is a widely used tool to help consumers reach healthy food choices. This study explores the influence of alternative FoPL on consumer food choices using the discrete choice experiment methodology. Results indicate that the behaviour and tendency of respondents choosing healthy food baskets versus their current (unhealthy) food basket may be sensitive to the manner in which the nutritional information is described to them. When comparing willingness to pay (WTP) results we find that whilst preferences are similar across the FoPL tested, different choice outcomes are realised. In general, using a FoPL which incorporates the interpretive elements - high, medium and low text; % GDA and traffic light colour coding, leads to the most significant shift towards healthy food choices compared to the other three FoPL formats tested in this study (text only, text and GDA, text and colour). A consistent approach to FoPL may result in less consumer confusion, healthier food decisions and, thus, have gains from a public health perspective. These findings offer an evaluation and contribute to the debate on FoPL.

## **7. An Investigation Into the Role of Alcohol in the Social Processes of New University Students.**

**Rachel Brown, DECIPHer: Centre for the Development and Evaluation of Complex Interventions for Public Health Improvement**

### ***Abstract***

This research will employ a mixed method cohort approach, including qualitative interviews of strategic staff members within the university and of first year students in halls of residence. I will consider the organizational level of influence by mapping the university context in relation to on-campus risk indicators for excess alcohol use and other environmental influences. Interviews with students will be conducted repeatedly over the course of first year of study in order to map social processes and behavioural changes. A mixed methods process approach will provide the required depth of student-centred understanding of the social context of drinking behaviour.

The research questions to be addressed are:

How do students, as agents, utilise alcohol in the formation of new friendship groups at university?

What is the role of alcohol in the social processes of friendship groups, specifically formation and maintenance over time?

How do students come to understand the rules and resources which underpin alcohol use at university?

How does a university present alcohol to new students, as part of the organisational structure.

## **8. Dietary Fat and Breast Cancer survival: a systematic review and meta analysis.**

**Dr Marie Cantwell, Centre of Excellence for Public Health Northern Ireland**

### ***Abstract***

#### *Background*

Dietary fat is positively associated with breast cancer risk but its relationship with breast cancer survival is unclear.

#### *Objective*

To conduct meta-analyses of studies to clarify the association between dietary fat and breast cancer survival.

#### *Design*

MEDLINE and EMBASE were searched for relevant articles published up to March 2012. Risk of all-cause or breast cancer specific death was evaluated by combining multivariable adjusted estimates comparing highest versus lowest categories of intake; and per 20 gram increase in intake of total and/or saturated fat (g/day) using random-effects meta-analyses.

#### *Results*

Fifteen prospective cohort studies investigating total fat and/or saturated fat intake (g/day) and breast cancer survival were included. There was no difference in risk of breast cancer specific death (n=6; HR=1.14; 95% CI: 0.86, 1.52; P=0.34) or all cause death (n=4; HR=1.73; 95% CI: 0.82, 3.6; P=0.15) for women in the highest versus lowest category of total fat intake. Breast cancer specific death (n=5; HR=1.63; 95% CI: 1.19, 2.24; P<0.01) was higher for women in the highest versus lowest category of saturated fat intake.

#### *Conclusions*

These meta-analyses have shown that saturated fat intake negatively impacts upon breast cancer survival.



### **9. The food environment, deprivation and childhood obesity'.**

**Andreea Cetateanu, CEDAR: Centre for Diet and Activity Research**

#### ***Abstract***

This cross-sectional study explores the hypotheses that characteristics of the neighbourhood food environment are associated with weight status in English children and also mediate the well-known association between deprivation and weight status. It utilises data collected annually in English primary and secondary schools from the National Child Measurement Programme (NCMP). The primary outcomes were the percentages of obese and overweight children aged 4 to 5 and 10 to 11 in census Middle Super Output Areas between 2007 and 2010. Primary exposures were measures of access to the food environment based on the location of food outlets. Associations between weight status and the food exposure were investigated using regression models, and the Preacher and Hayes method was used for mediation analysis.

After adjustment, higher overweight and obesity is associated with more unhealthy food outlets for older children. In mediation analysis, between 1-4% of the total effect of deprivation on overweight and obesity in English children was explained by the number of unhealthy food outlets in the area. These findings suggest that childrens weight status may be influenced by their local environment, and efforts to create healthier food environments may reduce socioeconomic disparities in obesity, particularly in older children.

**10. Are there socio-economic inequalities associated with type 2 diabetes care?**

**Anna Christie, Fuse: Centre for Translational Research in Public Health**

***Abstract***

This study contributes to current understanding of intervention-generated inequalities by examining the impact of secondary and tertiary preventive interventions for type 2 diabetes by socio-economic status (SES).

A secondary data analyses of a hospital diabetes register was conducted to determine if receiving the same care was associated with differential health outcomes by SES. Namely, the receipt of recommended care processes and attendance at a hospital clinic as opposed to primary care only. The Index of Multiple Deprivation 2004 was used as an indicator of patients SES. Multilevel models were fitted with patients blood glucose (HbA1c) as the dependent variable with interaction effects between SES and care indicators. Repeated measurements were nested within patients who were cross classified within their general practice.

In both models, high SES patients were more likely to have lower HbA1c than low SES patients. Yet, the interaction effects suggested that patients receiving high quality of care, high SES patients were significantly more likely to have higher HbA1c compared to low SES patients. In contrast patients receiving shared care, high SES patients were more likely to have lower HbA1c than low SES patients. More complex analyses is needed to determine the direction of these associations.

## **11. A shared decision-making tool to improve lifestyle among CHD patients.**

**Dr Judith Cole, Centre of Excellence for Public Health Northern Ireland**

### ***Abstract***

#### *Background*

Our previous qualitative study (Cardiology Research & Practice, 2011) explored barriers to and incentives for lifestyle change among CHD patients. Based on our results we designed a shared decision making tool which aims to motivate patients with CHD to think about diet and physical activity (PA) with a view to adopting healthier lifestyles. This study tested the feasibility of the tool.

#### *Methods*

The paper based tool was designed to be completed in conjunction with a health professional and to take into account internal and external conditions and environments relevant to patients. Four sections outlined recommended levels of PA and diet, ascertained respondents beliefs about lifestyle and whether they were ready to take action, wished to discuss options further or would like more information before proceeding.

Twelve randomly selected patients with CHD from two purposively selected practices completed the decision tool and gave opinions on each question. Analysis of patients comments was qualitative. Results were used to modify the tool.

#### *Results*

The tool was acceptable to patients, facilitated conversation between patient and interviewer and stimulated thought about PA and diet. Patients suggested amendments to each section to improve readability and relevance.

#### *Conclusions*

The results of the feasibility study are encouraging and provide a solid basis for development of the tool. A larger study, seeking further refinement and testing different methods for the tools administration, such as a mobile phone application, is warranted.

**12. Is change in environmental supportiveness between primary and secondary school associated with a decline in children's physical activity levels?**

**Dr Emma Coombes, CEDAR: Centre for Diet and Activity Research**

***Abstract***

We evaluated whether a change in environmental supportiveness between primary and secondary school is associated with the decline in physical activity levels typically observed in adolescents. Data were analysed from 518 UK children from 23 schools. Participants wore an accelerometer for 5 weekdays during their primary school final year (aged 10-11yrs) and again a year later during their secondary school first year. Environmental supportiveness was assessed using a Geographical Information System based on availability of greenspace, roads, and destinations within the school travel corridor and neighbourhood. We then examined change in the amount of moderate-to-vigorous physical activity (MVPA) undertaken at primary school compared to secondary in relation to change in school supportiveness.

We found a decline in evening MVPA at secondary school compared to primary (-12.8mins,  $p<0.001$ ). This decline was greatest for children who transitioned from a supportive primary school to a less supportive secondary school (-18.7mins,  $p<0.001$ ). Children who transitioned to a more supportive school had the most protection from reduced MVPA (-6.0mins,  $p=0.198$ ). These findings suggest that attending a secondary school with a supportive environment minimises adolescents MVPA decline. Targeting the provision of greenspaces and child-friendly destinations around secondary schools may help maintain MVPA levels into adolescence.

**13. A qualitative study of the role of humour in young people's decision making about Chlamydia screening.**

**Jo Crichton, DECIPHer: Centre for the Development and Evaluation of Complex Interventions for Public Health Improvement**

***Abstract***

Humour is often used in interventions to promote health behaviours. Humour may help young people to engage with health issues and overcome embarrassment or anxieties. However, there is a lack of evidence about what humour in health promotion means to different young people.

**Objective:** We explored the role of humour in chlamydia screening interventions in further education colleges. **Methods:** We used a grounded theory approach to data collection and analysis. We carried out in-depth interviews with 30 male and female students aged 17-24, 4 interviews with key informants, and non-participant observations of 7 chlamydia screening interventions involving around 2000 students. **Results:** The intervention intentionally used humour through offering comical promotional materials to those who participated in screening. However, young people also initiated humorous social interactions in response to the intervention. For many participants, humour helped to create enjoyment and motivation to take a test, reduced embarrassment or anxieties, and played a social role by creating fun and memorable group experiences. For others, humour was not important for participating in screening. Humour was used by both men and women but appeared particularly useful for engaging younger age groups and men.

#### **14. Model behaviour: GPS v GIS to examine our journey to work.**

**Alice Dalton, CEDAR: Centre for Diet and Activity Research**

***Abstract***

Understanding travel behaviour helps us to improve our environment, to be active and healthy, and to target public health interventions. Problems with using actual (GPS-derived) data to map and analyse journeys means routes are often modelled instead. Limited empirical work assesses their usefulness, so we test this using data on commuting behaviour from a study in Cambridge, UK.

The shortest route between home address and workplace was modelled for 51 participants using GIS. Actual routes (176) were taken from participant-derived GPS, attributed with self-reported mode of travel. These routes to work were compared for similarity of distance, proportion of overlap, and environmental characteristics, using regression analysis.

Actual routes were 4.3km longer than modelled on average, partly (23%) explained by distance, mode and propensity to via. Routes most accurately predicted are car-plus-walk journeys, routes without vias, and longer distance trips. In terms of overlap, routes most accurately predicted are bus and walk trips; direct, short routes, with more destinations; and for journeys made by older, healthier people.

Modelling routes is a useful method for describing distance between home and work, but is not so valuable for detailing association between the environment and healthy behaviours. Using GPS-derived data is complex and resource intensive, but is still recommended.

## **15. Households at risk of food poverty across Northern Ireland.**

**Lorraine Fahy, Other (please state) Institute of Public Health in Ireland**

### ***Abstract***

#### *Background & Objectives*

The number of households whose financial resources are considered insufficient to provide an adequate diet for their members is growing. It has become critical to develop indicators that identify households that are "at risk of food poverty". Because of the discretionary nature of food spending in many households, such indicators need to consider both food and non-food spending.

#### *Design & methods*

Food & non-food expenditure, and socio-demographic were collected from 602 households during the Northern Ireland Living Costs and Food Survey 2009. A household is said to be food poor if its food expenditure is less than 60% of the national median value. Non-food poor households are defined similarly using non-food expenditure. These two classifications were combined to classify a household's risk of food poverty into one of four levels. Binary logistic regression modelling explored households at food poverty risk.

#### *Main findings*

In 2009, 14.8% of households in Northern Ireland were at risk of food poverty. A further 16.5% of households were possibly at risk of food poverty. The effects of the socio-demographic characteristics combined in complex ways.

#### *Conclusions & implications*

Using food expenditure alone understates the food situation of a large number of households. Household characteristics determined risk in complex ways. Using both food and non-food expenditure clarified a number of these complexities; particularly in disadvantaged households.

## **16. Mortality modelling and longevity risk.**

**Dr Declan French, Centre of Excellence for Public Health Northern Ireland**

### ***Abstract***

Increasing longevity and persistent underestimation of these increases have drawn attention to the management of longevity risk in pension funds, life insurers and health insurers. The traditional solution for dealing with the longevity risk is to sell the liability via an insurance or reinsurance contract. These can be made directly between pension plan sponsors and counterparties or through the developing capital markets for these contracts. Many of these contracts are based on paying a fixed amount based on expected mortality rates in return for a payment based on actual realized mortality rates (a q-forward). The biggest such deal to date has been in January 2012 for a €12bn between Dutch insurer Aegon and Deutsche Bank who subsequently passed their exposure on to the capital markets.

In response to these developments, the academic literature has taken an interest in improving the accuracy of mortality forecasts. These models are largely driven by trends in the data and tend to ignore other factors such as secular trends in health risk factors or international issues such as migration and technology diffusion.



**17. Change in alcohol outlet density and alcohol-related harm to population health.**

**Dr Richard Fry, DECIPHer: Centre for the Development and Evaluation of Complex Interventions for Public Health Improvement**

***Abstract***

*Background*

Excess alcohol consumption has serious adverse effects on health and violence-related harm. In the UK around 37% of men and 29% of women drink to excess and 20% and 13% report binge drinking. One proposed method to reduce consumption is to reduce availability through controls on alcohol outlet density. In this study we investigate the impact of a change in the density of alcohol outlets on alcohol consumption and alcohol related harms to health in the community.

*Methods/Design*

A natural experiment of the effect of change in outlet density between 2005-11, in Wales, UK; population 2.4 million aged 16 years and over. Data on outlets are held by the 22 local authorities in Wales under The Licensing Act 2003. Longitudinal statistical analysis will use (1) multilevel ordinal models of consumption and logistic models of admissions and Accident & Emergency attendance as a function of change in individual outlet exposure, adjusting for confounding variables, and (2) spatial models of the change in counts/rates of each outcome measure and outlet density. We will assess the impact on health inequalities and will correct for population migration.

*Discussion*

This inter-disciplinary study requires expertise in epidemiology and public health, health informatics, medical statistics, geographical information science, and research into alcohol-related violence. The dissemination strategy will include policy makers, in national and local government. Public Engagement will be through The Clinical Research Collaboration-Cymru "Involving People" network, which will provide input into the implementation of the research.

**18. Reduction in non-pharmacological management of type 2 diabetes with pay-for-performance in primary care in the UK.**

**Dr Naomh Gallagher, Other (please state) CoE/Public Health Agency**

***Abstract***

*Hypothesis*

The most comprehensive and expensive pay-for-performance scheme for primary care in the world to date was introduced in the United Kingdom in 2004, and included financial incentives for tight glycaemic control in diabetic patients. It is unknown whether these incentives changed the proportion of patients managed without pharmacological treatment.

*Methods*

Data from the medical records of a representative sample of 100,000 patients with type 2 diabetes across the UK was extracted from the General Practice Research Database for the period 1999-2008. An interrupted time series analysis of the treatment patterns for newly diagnosed patients (n=21,197) was undertaken. In each month the proportion of newly diagnosed patients beginning pharmacological treatment was calculated, and the impact of pay-for-performance was assessed using segmented linear regression models.

*Results*

Overall, the proportion of patients managed non-pharmacologically was 47% at 12-months post diagnosis, and 40% at 24 months. The annual rate of initiation of pharmacological treatment within 12 months of diagnosis decreased prior to the introduction of pay-for-performance by 1.2% per year (95% CI -2.0%, -0.5%) and increased post-introduction period by 1.9% per year (95% CI 1.1%, 2.7%). The equivalent figures for treatment within 24 months since diagnosis were pre-trend -1.4% (95% CI -2.1%, -0.8%), post-trend 1.6% (95% CI 0.8%, 2.3%).

*Conclusions*

This study suggests that the introduction of financial incentives through QOF in 2004 has resulted in a change in the proportion of newly diagnosed diabetes patients being initiated on medication within two years of diagnosis.

**19. Alcohol use in adolescence and participation in team sports: Different findings for young offenders.**

**Britt Hallingberg, DECIPHer: Centre for the Development and Evaluation of Complex Interventions for Public Health Improvement**

***Abstract***

Participation in organised activities during adolescence has been associated with many beneficial outcomes. However, school-based studies have shown that participation in a team sport is often associated with increased alcohol use. It is not clear if this relationship exists for adolescents less represented in research, such as young offenders. Two groups of adolescent males aged 13-18 were recruited in Cardiff; young offenders from a local Youth Offending Team (YOs, n = 95) and a group of controls from local schools (n = 53) matched on IQ and socioeconomic status. Questionnaires were used to measure participation in organised activities, symptoms of externalising behaviour as well as indicators of hazardous drinking. YOs had significantly higher scores of hazardous drinking, and participated in fewer organised activities than controls. Scores of hazardous drinking did not differ between YOs and controls if they participated in at least 1 team sport. YOs and controls did significantly differ on scores of hazardous drinking if they participated in no organised activities. Symptoms of externalising behaviour did not predict patterns of participation. Although participation in a team sport may be associated with increased levels of alcohol use in school-based studies, different relationships exist for young offenders.

## **20. Using GPS to define childrens routes to school: when should we bother?**

**Dr Flo Harrison, CEDAR: Centre for Diet and Activity Research**

### ***Abstract***

#### *Purpose*

The school journey provides exposure to food and PA environments. Typically GIS have been used to model assumed routes to school, but these may differ from those actually chosen. We aimed to identify the characteristics of children and their environments which make the modelled route more or less representative of that actually taken.

#### *Methods*

Participants were 175 13-14yr old children participating in the SPEEDY study who wore GPS units for up to 7 days. Actual routes to/from school were extracted from GPS data, and shortest routes between were modelled in a GIS. Differences between them were assessed according to length and percentage overlap using multilevel regression models.

#### *Results*

GIS routes underestimated route length by 21.5% overall, ranging from 8.4% among walkers to 23.4% for bus users. Living in a village raised the odds of increased differences in length (OR 3.36 (1.32-8.58)), while attending a more urban school raised the odds of increased percentage overlap (OR 3.98 (1.49-10.63)).

#### *Conclusions*

Depending on the exposure and setting, GIS routes may describe actual environmental exposures to an acceptable level. They appear most accurate among urban populations, those living close to school, and those travelling by foot.

## **21. Shapes of trajectories of 10 major risk biomarkers of cardiovascular disease.**

**Dr Maria Hughes, Centre of Excellence for Public Health Northern Ireland**

### ***Abstract***

Several novel blood biomarkers have been associated with cardiovascular disease (CVD) with some combinations useful at complementing classic risk factors (e.g. smoking) for predicting 10 year risk of cardiovascular disease among healthy populations. Different components and combinations of biomarkers may be important at different time points during disease progression. We aim to assess trajectories of 10 novel biomarkers representing different biological systems or functions (myocardial damage (e.g. Troponin), lipids, inflammation (e.g. CRP), kidney and liver function) in an initially healthy prospective cohort from Glostrup, Denmark which has repeatedly measured biomarkers at several time points and followed up cardiovascular events (coronary heart disease and ischemic stroke) for 26 years. We constructed multivariable-adjusted regression models to assess relations across three time points, change in biomarkers with change in lifestyle and socioeconomic risk factors. Adverse changes in lifestyle and clinical factors were associated with accelerated biomarker profiles. Certain combinations of markers were associated with short term and long term risk. This approach may identify people in the population with particular combinations of risk factors that are detrimental and provide treatment in the early stages of disease.

## **22. Physical activity buddies: a network analysis of social aspects of physical activity in adults.**

**Dr Ruth Hunter, Centre of Excellence for Public Health Northern Ireland**

### ***Abstract***

#### *Background*

Previous research has shown that social networks have a significant influence on health behaviours. However, this area has been largely under-explored in physical activity. Previous methods of collecting self-reported, cross-sectional sociometric data are insufficient to capture the true dynamic nature of social networks specific to physical activity behaviour. Emerging technologies offer a new method of collecting objective, real-time sociometric data directly-related to physical activity behaviour.

#### *Methods*

Technology involving Radio-Frequency Identification (RFID) tags (embedded in a users swipe card) and Near Field Communications (based in sensors placed around the local environment to encourage physical activity) were used to collect sociometric and free-living physical activity data over a 12-week period. Users swiped their card at the sensors when undertaking physical activity, creating a timestamp. Social connections were inferred from this data by 1) the time between card swipes, and 2) the number of swipes at similar locations. Physical activity time was generated from aggregating the time between card swipes for each bout of activity. The strength and extent of network ties were evaluated using a range of mathematical parameters describing the network, including network density, degree and between-ness centrality.

#### *Findings*

Emerging technologies have the potential to offer novel methods of capturing real-time, objective, dynamic sociometric data specifically related to physical activity behaviour. Further, this data can be analysed in real-time to help inform behaviour change interventions and can further our understanding of the role of social networks on physical activity behaviour.

**23. Plans for a qualitative evaluation of the Cambridgeshire Guided Busway: the  
Commuting and Health in Cambridge study.**

**Dr Joanna Kesten, CEDAR: Centre for Diet and Activity Research**

***Abstract***

Changes to the environment supporting healthier modes of travel have the potential to increase population physical activity levels. The aim of the Commuting and Health in Cambridge study is to understand the impact of new transport infrastructure (the Cambridgeshire Guided Busway (CGB)) on active travel, physical activity and public health. This poster presents the three objectives of the qualitative component of this study. 1) To explore the public discourses around CGB through an analysis of print and social media (twitter). In particular the media analysis will investigate the impact of the busway on travel behaviours, the tone of portrayals (positive or negative) and changes in discourse over time. 2) To understand the experiences of busway users and non-users and to understand the intrapersonal and social mechanisms by which changes in travel behaviours and physical activity are brought about using interviews. These interviews will utilise vignettes (descriptions of events, or stories) to elicit the participants response and reaction. 3) To conduct an evaluation of the busway with a range of stakeholders who have been involved in the development, implementation and operation of CGB. These interviews will include a discussion of topics raised from the media analysis and user interviews.

**24. Barriers and facilitators to a healthy family diet: Informing Obesity interventions - a mixed methods study from the 'Growing up in Wales Environments for Healthy Living' (EHL) Study.**

**Ashra Khanom, DECIPHer: Centre for the Development and Evaluation of Complex Interventions for Public Health Improvement**

***Abstract***

*Introduction*

In this study we examined factors associated with dietary choices in families with young children. Method: Ten percent of the families (n=61) participating in the EHL study (n=621), were asked to consent to an in-depth semi-structured interview regarding dietary behaviours. Interviews explored parents knowledge of, and incentives and disincentives to healthy eating. Transcripts underwent thematic analysis. Mothers on the EHL birth cohort study also provided self-reported demographic characteristics by questionnaire and 7-day food diaries (completed by mothers, fathers and children).

*Results*

61 mothers and 35 fathers participated. Recommendations suggest interventions on two levels.

1) Individual level:

Previous habits and experiences (such as ability to cook) profoundly influenced parents ideas about diet. Dietary habits were usually formulated during teenage years and pregnancy/parenthood was a time when parents became more receptive to change.

2) Population level:

Barriers to healthy eating were shift work, low income, lack of local access to cheap fruit and vegetables, and cheap healthy convenience food options. It was suggested that supermarkets could *play a greater role in improving family diet behaviours.*

*Conclusions*

Socioeconomic barriers (cost, access and local habits) were the main barriers to healthy diets for families with young children. Improving dietary behaviours for children will require environmental and society level changes rather than individually targeted methods.

*Conflict of Interest*

The author declares no conflict of interests.



Abstracts for Posters

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National Institute for Social Care and Health Research (NISCHR)

## **25. Looking into behaviour change maintenance from the theoretical perspective. A structured theory review.**

**Dominika Kwasnicka, Fuse: Centre for Translational Research in Public Health**

### ***Abstract***

#### *Background*

Behaviour change interventions have usually short term effects. The aim of this review was to identify theoretical explanations for behaviour change maintenance.

#### *Methods*

The review is based on an existing database of behaviour theories; systematic electronic database searches and expert advice. Each theory was reviewed to identify hypotheses about behaviour change maintenance.

#### *Findings*

Over 100 behaviour theories were identified and critically examined. Seven main themes emerged from the relevant theories: (1) Motives: People tend to maintain their behaviour if they are satisfied with behavioural outcomes and if they enjoy engaging in the behaviour; (2) Coping: Relapse prevention and overcoming barriers in behaviour change process facilitates behaviour maintenance; (3) Self-regulation: Ability to successfully regulate behaviour underlines behaviour maintenance; (4) Resources: People tend to be less successful in self-regulating and maintaining behaviour if their cognitive resources are limited; (5) Habit: Even when cognitive resources are limited, people are still quite effective with maintaining behaviours which are habitual; (6) Identity: People maintain behaviours which are in congruence with their beliefs and values; (7) Environment, social influences and social change: Supportive environment and social support are more important for behaviour maintenance than for behaviour initiation.

#### *Discussion*

Testable and comprehensive theoretical assumptions of behaviour change maintenance can explain sustained health behaviour following behaviour change.

**26. Partners perceptions of success of a local public health collaborative to promote active ageing in the community.**

**Hannah Littlecott, DECIPHer: Centre for the Development and Evaluation of Complex Interventions for Public Health Improvement**

***Abstract***

*Background*

Public health decisions often require successful multi-sector partnerships, especially for physical activity promotion for older adults. Little research has been reported on factors associated with success or failure of such collaboratives.

*Methods*

A convergent parallel mixed-methods design was employed, utilising a survey and semi-structured interviews. AVONet members (n=24) completed the survey; a sub-sample of four academics and four practitioners participated in interviews. Quantitative and qualitative comparisons were made between academics and practitioners perceptions of success, potential for sustainability and satisfaction with structure and relationships within the network.

*Results*

Participants perceived the AVONet collaborative positively. Academics gave significantly more positive responses than practitioners for success and structure ( $P \leq 0.05$ ). Strong positive correlations were observed between success and structure and balance between information transfer and exchange ( $P \leq 0.05$ ). Qualitative findings confirmed quantitative results stressing the importance of a collaborative. Participants also suggested strategies to improve success.

*Conclusions*

Subjective success in building a public health network can be achieved during a 10-month period. Greater sustainability may be achieved with improved involvement of practitioners within the management group and intensification of inter-agency communication. Longitudinal analysis regarding implementation, effectiveness and sustainability of similar public health networks is required.

## **27. Sample Size Calculation for Public Health Interventions.**

**Huw Lloyd-Williams, Other (please state) Bangor University**

### ***Abstract***

This paper looks at the methodological considerations surrounding issues of determining an appropriate sample size for a study looking first at the issue in the context of clinical trials before going on to discuss the issue in terms of public health. The power of a test is the probability that we reject the null and find an actual difference in parameters. While clinical trials calculate sample sizes on the basis of clinical outcomes we see that these sample sizes may not provide enough power for any economic evaluation we may wish to perform. This is because economic evaluations deal with both costs and treatment effects. Usually economic evaluation concerns estimation rather than hypothesis testing. Therefore calculations of power and sample size in economic evaluation are done in relation to some value of maximum willingness to pay for a unit of treatment effect. In economic evaluation of public health interventions the effective sample size may be less than the actual sample size used. We then offer three case studies that provide examples of sample size estimation under different scenarios: when no power or sample size calculations have been mentioned; when power or sample size calculations have been done properly; and retrospectively calculate the power of a study. We argue that a systematic review of the literature is needed to highlight the current state of play in regard to sample size estimation especially in economic evaluation of public health interventions. By methodically collating the available evidence the case for "best practice" in choosing the appropriate sample size can be put forward and progress can be made in increasing the number of studies that are sufficiently powered.

**28. The Co-Evolution of friendship and behaviours: a longitudinal social network analysis of smoking and alcohol use amongst adolescents of the BYD Study.**

**Dr Helen McAneney, Centre of Excellence for Public Health Northern Ireland**

***Abstract***

*Objective*

To explore the role of and contribution that social networks play in the uptake of smoking and alcohol behaviour amongst adolescents in the transitional years towards adulthood.

*Methods*

The Belfast Youth Development Study is a longitudinal sample of ~4,300 adolescents from 43 schools across Northern Ireland (2001-present). Self-reported data on social networks, lifestyle and substance abuse behaviours were collected in waves 1 - 5 through annual self-complete questionnaires. Employing the methodology of actor based modelling for network dynamics, SIENA (Simulation Investigation for Empirical Network Analysis) statistically investigates the co-evolution of the social network and the behaviour of these people.

*Results*

No single model is consistent across all schools and throughout the time evolution of the data. Different mechanisms appear as significant/fundamental in the evolution of the social networks as exemplified by meta analysis across gender compositions of the schools and the sampling waves of data.

*Conclusions*

Is there one universal set of "school yard rules" that adolescents are unknowingly governed by? No. Gender composition, controlled vs. maintained and other school level moderators exist that affect the evolution of the social and behavioural networks of adolescences. To affect change in risk-taking behaviour, policy intervention and design must account for these differences.

**29. A systematic review and meta-analysis examining 'A posteriori' dietary patterns and risk of Type2 Diabetes.**

**Dr Claire McEvoy, Centre of Excellence for Public Health Northern Ireland**

***Abstract***

Background and objective: Dietary pattern (DP) analysis may help to elucidate diet-disease relationships, such as the relationship between eating behavior and risk of type 2 diabetes mellitus (T2DM). This review and meta-analysis was performed to examine the association between a posteriori-derived DP and risk of T2DM. Methods: Databases were searched for articles published up to July 2012 and data was extracted by two independent reviewers. Prospective studies examining DP, derived by principle component analysis, and T2DM risk were eligible for meta-analysis. Multivariate-adjusted odds ratios were combined, using a random-effects meta-analysis. Results: Nine prospective studies involving 309,430 participants and 16,644 incident cases of T2DM were included for meta-analysis. Two broad DPs ("Healthy/Prudent" and "Unhealthy/Western") were identified based on food factor loadings published in original studies. Pooled results indicated a 15% lower T2DM risk for those in the highest category of "Healthy/Prudent" pattern compared with those in the lowest category (95% CI:0.80, 0.91;  $P < 0.0001$ ). Compared with the lowest category of "Unhealthy/Western" pattern, those in the highest category had a 41% increased risk of T2DM (95% CI: 1.32, 1.52,  $P < 0.0001$ ). Conclusions: Dietary intake is an important determinant for T2DM risk independent of other lifestyle factors, including body weight.

### **30. Adolescents views about a proposed reward intervention to promote healthy eating in the school setting.**

**Dr Michelle McKinley, Centre of Excellence for Public Health Northern Ireland**

#### ***Abstract***

##### *Background and objectives*

A reward or incentive scheme may be an effective method to influence young people's eating behaviour but evidence regarding this approach is limited. The aim of this qualitative study was to explore the views of 11-12 year olds about a proposed reward intervention associated with their food choices in the school canteen.

##### *Methods*

Focus groups were held in ten extended schools (i.e. the most disadvantaged schools according to the areas in which their pupils live) in Northern Ireland. Focus group sessions were audio-recorded and transcribed verbatim. An analytical data coding framework was applied to transcript data.

##### *Results*

Five schools were located in urban-cities, three in urban-towns and two in rural areas. Ninety pupils took part in the focus groups (54 girls, 36 boys). There was a high degree of acceptability for the concept of a reward scheme. There was diversity in the type of rewards valued by pupils, largely defined by geographical area and socio-cultural differences; for example, pupils from rural and small urban-towns tended to emphasise more group-based and longer-term rewards, whereas pupils from urban-city schools tended to suggest more individualistic and immediate rewards. In terms of factors influencing food choice within the school canteen, the major factors were food price, value for money, taste and visual appearance. Pupils felt that factors outside of their control, such as being assigned to the second lunch sitting, availability of seating and length of queues, placed considerable constraints on their food choice.

##### *Conclusion*

This research indicates a high degree of acceptability for a proposed rewards-based intervention but has also highlighted a number of socio-cultural and micro-environmental factors that need to be considered and addressed when developing such an intervention.

##### *Acknowledgements*

This research was funded by the Northern Ireland HSC R&D Office.

### **31. Stress in the city: a multilevel analysis of anxiolytic uptake in Northern Ireland.**

**Dr Aideen Maguire, Centre of Excellence for Public Health Northern Ireland**

#### ***Abstract***

Half the world's population now lives in cities and by 2030 this proportion will increase to two-thirds. There is growing concern over the negative implications for health associated with living in urban areas. Individuals living in cities are thought to be at an increased risk of cancer, heart attack, stroke and schizophrenia. Studies testing the association between urban dwelling and depression and anxiety have produced conflicting results. This study aims to discover if living in a city increases the risk of suffering from depression or anxiety, using antidepressant and anxiolytic prescribing as proxy indicators.

Anxiolytic and antidepressant prescribing data from the national prescribing database was linked to individual level census data from the Northern Ireland longitudinal study. Multilevel regression analyses were carried out to test the association between city dwelling and drug uptake.

After full adjustment for socio-demographic factors, individuals living in cities were 21% more likely to receive anxiolytic medication compared to those living in rural areas (OR=1.21, 95% CI 1.16, 1.26). The association was less evident between city dwelling and antidepressant uptake. Results from the selective migration analysis found that "ever living" in a city increased the likelihood of receiving anxiolytic medication.

Even after adjustment for known mental health risk factors city living increases the likelihood of receiving anxiolytic medication.



**32. Socio-economic inequalities in diet among UK adults: an updated picture of key foods and nutrients from national surveillance data.**

**Eva Maguire, CEDAR: Centre for Diet and Activity Research**

***Abstract***

**Background** In the UK, social inequalities in diet have not been comprehensively assessed in recent years. **Methods** We used the latest National Diet and Nutrition Survey (2008-11) to examine dietary intakes among adults ( $\geq 19$ y), stratified by three indicators of socio-economic position (SEP). Multivariate linear regressions generated estimates of overall and sex-specific intakes for fruit and vegetables (FV), red and processed meat (RPM), non-milk extrinsic sugars (NMES), and saturated fatty acids (SFA). Multivariate logistic regression produced adjusted odds ratios for oily fish consumption. **Results** We identified social gradients in intakes for all foods and one nutrient (NMES). Although in the expected direction the patterns were not consistent. For example, while FV intake increased steadily with SEP across all indicators, RPM decreased steadily with education, and was less consistent across levels of occupation. Differences in intakes between the highest and lowest SEP groups were significant for most SEP indicators. The exceptions were RPM by income and SFA, which showed no patterning by SEP. **Conclusions** Multiple socioeconomic dietary inequalities were evident in intakes of certain food groups and nutrients addressed in national nutritional targets. The use of available data in monitoring dietary trends is important for designing public health interventions.

### **33. Age-period-cohort modelling of childhood type 1 diabetes - Results from the Northern Ireland Childhood Diabetes Register.**

**Eileen Morgan, Centre of Excellence for Public Health Northern Ireland**

#### ***Abstract***

##### *Objective*

To investigate age-period-cohort effects on the increasing trend of childhood Type 1 diabetes in Northern Ireland.

##### *Methods*

Data from the Northern Ireland Childhood Diabetes Register was used in this study. There were 2,529 children diagnosed with Type 1 diabetes during 1989-2012 who were included in the analysis. Poisson regression models were used to model the effects of sex, age, calendar time, and birth cohorts on temporal trends with 3-year intervals used for age, period and birth cohort. A drift term was used to describe linear trends that could be explained by either period or cohort. Hierarchically ordered models were compared using Akaike information criterion and likelihood ratio tests to identify the best fitting model.

##### *Results*

The incidence rate increased from 19.1 per 100,000 in 1989 to 35.5 per 100,000 in 2012 giving an estimated annual increase of 2.9%. Age-period-cohort analysis showed that a cohort effect seemed to dominate over a period effect.

##### *Conclusions*

The incidence of Type 1 diabetes in children in Northern Ireland is increasing. The dominating cohort effect suggests that exposures early in life play an important part in the onset of childhood diabetes.

### 34. "Could you repeat that please?"

**Dr Mark O'Doherty, Centre of Excellence for Public Health Northern Ireland**

***Abstract***

Data on health of ageing populations are essential for health, social and economic research and management. Such data should both be valid and precise. Furthermore, they should be based on repeated measurements over time, to identify and quantify changes in health-related parameters, their determinants and confounders. CHANCES (Consortium on Health and Ageing Network of Cohorts in Europe and the United States) is a collaborative large scale project funded by the European Commission within the Seventh Framework Programme, which aims at combining and integrating on-going studies in order to produce evidence on ageing-related health characteristics and determinants in Europe.

Both C-reactive protein (CRP) and obesity have been shown to be related to cardiovascular disease outcomes. However, much of this epidemiologic evidence is usually based on these risk variables being measured once at "baseline". True estimations using only "baseline" measurements may not be accurate because many physiologic variables are not stable over time, and may have diurnal, seasonal, or long-term variation, which may have considerable impact on the accuracy of risk prediction.

More so, missing data is a common problem in repeated analysis, and in multivariate analysis of large sample surveys even a small proportion of missing data on many variables quickly adds up to a large number of cases being deleted. Journal editors and reviewers are increasingly strict about missing data problems and solutions, and therefore appropriate techniques need to be employed where possible to avoid missing data becoming an issue.

To assess this, we aim to use cohorts within CHANCES which have the appropriate repeated measures available, to clarify the relationship between CRP and obesity with incidence of cardiovascular outcomes and total mortality.

### **35. The Physical Activity and Nutrition Intervention (PANI) Tool.**

**Kevin P Balanda, Fiona O'Shea, Nadine McQuillan, Adam McCune, Louise Bradley,  
Institute of Public Health in Ireland (CoE NI)**

#### ***Abstract***

##### *Background & Objectives*

The PANI Tool is hosted on the Health Well website ([www.thehealthwell.info/PANI](http://www.thehealthwell.info/PANI)). It is a web-based tool developed in response to a recognized need from policy makers and practitioners for more information about effective obesity prevention and management activities occurring across Ireland. It was developed in collaboration with the Public Health Agency (Northern Ireland) and the Health Service Executive (Republic of Ireland).

##### *Design & Methods*

Details about the delivery, development, evaluation and perceived effectiveness of obesity-related interventions were collected through an online questionnaire. These details were then incorporated into a web interface, written in an open source content management system called Drupal, developed through a series of stakeholder workshops.

##### *Main Findings*

The tool currently contains approximately 200 interventions.

Using the web interface involves three steps:

1. Users specify the type of intervention they are looking for: its target population, focus (prevention or management) and intended outcomes.
2. Users are then presented with details of relevant interventions alongside lists of related documents drawn from the Health Well website
3. Finally, using a number of interactive tools, users systematically appraise the relevant interventions and identify those that warrant further investigation.

The tool was launched in February 2012

##### *Conclusion & Implications*

Initial feedback is positive and confirmed the need for greater transparency about local interventions. A number of enhancements that will improve the web interface and ensure the database is kept up to date were identified.

**36. Changes in perceptions of the environment and changes in active commuting over 12 months: results from the Commuting and Health in Cambridge study.**

**Dr Jenna Panter, CEDAR: Centre for Diet and Activity Research**

***Abstract***

*Purpose*

To assess the associations between changes in perceptions of the route environment and changes in active commuting.

*Method*

Commuters in Cambridge, UK reported perceptions of their route to work and commuting trips in the previous week via questionnaires in 2009 and 2010. We computed changes in perceptions, time spent walking and cycling, and the proportion of car trips and switches away from the car as the usual mode of travel. Associations were modelled using linear or logistic multivariable regression models.

*Results*

Mean changes in commuting were relatively small (walking: +3.0 min/week; cycling: -5.3 min/week; car trips: +1.33%). Those who reported that it became less pleasant to walk on average reported a 6% increase in car trips and a 12minute/week decrease in walking to and from work. Those who reported an increase in the perceived danger of cycling or crossing the road also reported increases in car trips (+8% and +6%). Those who reported an increase in the perceived convenience of public transport or safety of cycling were more likely to switch away from the car.

*Conclusions*

Interventions that focus on improving the perceived safety and pleasantness of routes and providing convenient public transport may help to promote active commuting.

**37. How much is '5-a-day'?: consumer knowledge of fruit and vegetable portion size.**

**Dr Ciara Rooney, Centre of Excellence for Public Health Northern Ireland**

***Abstract***

*Objective*

To assess the knowledge of fruit and vegetable (FV) portion sizes in a sample of low FV consumers (< 2 portions/day).

*Methods*

Participants (n=30) completed a questionnaire which assessed knowledge of four key areas: awareness of FV intake guidelines; identification of foods which are classified as a fruit or vegetable according to the "5-a-day" message; portion sizes of commonly consumed FV; and total portions provided by a combination of FV (to reflect normal dietary patterns).

*Results*

All participants claimed to be aware of FV guidelines and scored well when asked to identify foods that are classified as FV. Respondents did not score as well when asked to estimate how many portions examples of FV counted as according to the "5-a-day" message, individually or in combinations. In 73% of cases, individual's perception of how many portions different amounts of FV equated to was greater than in the "5-a-day" guidelines. Females were more likely to overestimate portions provided by FV (p=0.02).

*Conclusion*

Whilst consumers were aware of FV guidelines, they lacked knowledge on FV portion sizes. The results of this study suggest that consumers might underestimate the amount of FV required to achieve FV guidelines.

**38. Containment or Care? Policy, Prisons and Personality Disorder.**

**Ruari-Santiago McBride, Centre of Excellence for Public Health Northern Ireland**

***Abstract***

In 2010 NI's first personality disorder strategy was published. It aims to develop services for the large number of personality disordered offenders. This engaged policy ethnography qualitative seeks to investigate: what personality disorder is; how it is understood by the diverse range of actors that most interpret in everyday practice; and the socio-cultural factors that will shape the on-going production of personality disorder in the North of Ireland within criminal justice settings.

### **39. Healthy Eating and Lifestyle in Pregnancy (HELP): Baseline Data and Preliminary Qualitative Findings.**

**Dr Sharon Simpson, DECIPHer: Centre for the Development and Evaluation of Complex Interventions for Public Health Improvement**

#### ***Abstract***

##### *Introduction*

Approximately 1 in 5 pregnant women in the UK are obese. Obesity is linked to pregnancy and birth complications and excess weight gain during pregnancy may also lead to long-term obesity. The aim of the study is to assess whether a theory based weight management intervention for obese pregnant women, which targets physical activity and healthy eating, is effective in reducing women's BMI at 12 months from giving birth and at what cost.

##### *Methods*

The study is a cluster RCT. We recruited 598 obese pregnant women. The primary outcome is BMI at 1 year postpartum. Secondary outcomes include pregnancy weight gain, quality of life, mental health, waist-hip ratio, child weight centile, diet, physical activity, pregnancy and birth complications, social support and self efficacy. A health economic and process evaluation will also be conducted.

##### *Results*

Baseline characteristics demonstrate that women recruited to both arms of the trial are broadly similar in terms of demographics as well as the outcomes of interest. Most women were concerned about obesity and had tried to do something about their weight before they were pregnant. Scores on the GHQ indicated many women recruited may have mental health problems. The preliminary results of the qualitative interviews with participants will be presented.

##### *Conclusions*

If successful this intervention could significantly reduce health risks for the women, as well as NHS healthcare costs.



**40. Late effects of cancer and cancer treatment - the patients perspective.**

**Dr Charlene Treanor, Centre of Excellence for Public Health Northern Ireland**

***Abstract***

*Objective*

This study investigated the nature, onset and impact of late effects experienced by cancer survivors.

*Methods*

Sixteen cancer survivors participated in a qualitative interview study. The data were analysed deductively in order to derive the main themes from the interviews.

*Results*

Individual cancer survivors tended to experience more than one late effect spanning a range of physical and psychological effects. Late effects impacted on relationships, working life and activities of daily living. Survivors experienced psychological late effects from the end of treatment whereas the onset of physical late effects tended to occur later post-treatment. Late effects were managed using formal health services, informal social support and use of "well-being strategies". Survivors appeared to engage in a process of searching for reasons for experiencing late effects and struggled to make sense of their situation. Peer-patient comparison was used to help survivors make sense of or cope with their late effects. There appeared to be an association between personal disposition and late effects adaptation.

*Conclusion*

Late effects have a significant impact on the lives of survivors and there is a need to design and deliver intervention and self-management programmes tailored to specific late effects.

**41. Formative evaluation of the health trainer community health check service in County Durham.**

**Dr Shelina Visram, Fuse: Centre for Translational Research in Public Health**

***Abstract***

Socioeconomic deprivation is associated with higher risk of cardiovascular mortality, yet response rates for screening programmes tend to be low in deprived areas. The health trainer community health check service in County Durham was designed to target people who would not usually access screening and offer support to lower their cardiovascular disease risk.

A mixed methods design was used to evaluate the implementation and acceptability of this innovative approach, involving:

- i) Secondary analysis of monitoring data from 774 new clients between January and June 2012 to highlight baseline characteristics of this population.
- ii) Interviews and focus groups with a purposive sample of 20 stakeholders who commission, deliver or receive support from the service. Transcripts and fieldnotes were analysed using a thematic content approach.

Women were significantly more likely to access the service than men (62% vs. 38%), although eligible men were more likely than eligible women to attend the full health check (59% vs. 34%). More than half of clients (58%) were under the age of 50 and a similar proportion (60%) were from the least affluent groups. The health trainer-led service was perceived to add value by offering an alternative to health checks delivered through GP practices and pharmacies.

## **42. Measuring fruit and vegetable consumption - use of combined or single biomarkers.**

**Professor Jayne Woodside, Centre of Excellence for Public Health Northern Ireland**

### ***Abstract***

A high intake of fruits and vegetables (FV) is associated with reduced risk of chronic disease. Blood biomarkers offer an objective indicator of FV intake. We have examined whether it is possible to combine potential biomarkers of FV intake and better predict intake with a combined biomarker approach rather than using single markers or a panel of single markers. The FAVRIT study was an 8 week FV intervention study in mild hypertension. Participants were randomised to consume 1, 3 or 6 portions FV/d, and received weekly deliveries of FV. Compliance was encouraged during weekly phone calls from the research team. Participants (n=132) completed 7 day food diaries at baseline and week 8, while plasma vitamin C and serum carotenoid concentrations were assessed at the same time points. Change in vitamin C was most closely associated with change in self-reported FV intake ( $r=0.29$ ;  $p=0.006$ ), but when the changes in six carotenoids (lutein, zeaxanthin,  $\beta$ -cryptoxanthin,  $\alpha$ -carotene,  $\beta$ -carotene and lycopene) were added to the model, the percentage of variation explained in self-reported FV intake increased from 8.4% to 36.6%, which represents a 4.4-fold increase. Therefore this study shows that a combined biomarker approach may better predict FV consumption than single biomarkers.

**43. Measuring the will to live: estimating the effect of bereavement on mortality risk using a propensity score matched cohort.**

**Dr David Wright, Centre of Excellence for Public Health Northern Ireland**

***Abstract***

Bereavement is a major life event that is associated with increased risk of mortality in the surviving partner. The "widowhood effect" has been found in many countries and cultures but evidence for the effect is based solely on observational studies, leading to concern that the association may be the result of residual confounding. One approach that may allow better estimates of the true risk following bereavement is propensity score matching. Using data drawn from the Northern Ireland Mortality Study, a prospective record linkage study, we assembled a matched cohort of widow(er)s and married people based on socio-economic and household characteristics. Estimates of the widowhood effect obtained from the propensity score matched cohort were substantially different to conventional estimates, highlighting the utility of this method in similar settings.

#### **44. Estimating accelerometer wear and non-wear events: Comparative study of physical activity between children and adults.**

**Dr Shang-Ming Zhou, DECIPHer: Centre for the Development and Evaluation of Complex Interventions for Public Health Improvement**

##### ***Abstract***

##### *Objectives*

Accelerometer captures data in wear and non-wear time intervals. There is critical need to correctly classify accelerometer wear and nonwear time intervals. Different from adult physical activity(PA), child PA is characterized by frequent spasmodic bursts of short duration. The objective of this study is to establish and compare the wear and non-wear time events of physical activity between children and adults using a novel method which considers both movements and surface skin temperatures.

##### *Methods*

This study recruited 50 participants aged 5-16 yrs (n=23) and over 16 yrs (n= 27) in two phases - Phase 1: Development of wear/non-wear algorithm (n=20) and Phase 2 : Sensitivity/specificity analysis of the algorithm (n=30). Participants wore wrist mounted tri-axial accelerometers (GeneActiv) against the skin surface. They were asked to record time on and time off in which events of wear or non-wear time last for at least 15 minutes. A bi-moving-window based technique was proposed that combined temperatures and movements to classify the two events. The classifiers that consider movements or temperatures alone are used to compare with the proposed method.

##### *Results*

In this study, the proposed method outperforms the classifiers that consider movements or temperatures alone. The proposed method led to sensitivity of child PA as 0.96 (95% CI = (0.94, 0.99)) and specificity 0.93 (95 % CI = (0.90, 0.96)). As a comparison, the movement classifier achieved sensitivity 0.76 (95% CI = (0.6, 0.93)) and specificity 0.89 (95 % CI = (0.84, 0.94)), and the temperature classifier generated sensitivity 0.96 (95% CI = (0.93, 0.99)) and specificity 0.64 (95 % CI = (0.59, 0.69)). To compare with child PA, the proposed method led to sensitivity of adult PA as 0.93 (95 % CI = (0.88, 0.98)) and specificity 0.88 (95 % CI = (0.82, 0.94)). No significant difference is found between wear and non-wear time events of child and adult PAs.

*Conclusions*

There is no significant difference between classifications of wear/non-wear time events of child and adult PAs. Comparing with the classifications by accelerometer temperatures or movements alone, the proposed algorithm significantly improves the classification of wear/non-wear time and activity prediction for both children and adults.

**45. A systematic review and meta-analysis of change in psychological well-being after smoking cessation.**

**Gemma Taylor, UKCTCS: UK Centre for Tobacco Control Studies**

***Abstract***

*Background*

One of the most common reasons given for smoking is stress-relief. If smoking relieves stress, psychological well-being might deteriorate after cessation. Alternatively, it may be that smoking induces nicotine withdrawal symptoms, such as depression and anxiety. Understanding whether smoking cessation improves or worsens psychological well-being is important in framing public health messages.

*Methods*

We searched for longitudinal studies of adults, in any language, published between inception to April 2012. We included studies which reported baseline and follow-up psychological outcome scores in smokers who quit, and smokers who continued to smoke. Studies were combined using a generic inverse variance meta-analysis to assess the difference in change in psychological outcomes, from baseline to follow-up, between smokers and quitters.

*Results*

We included 26 studies. Quitters showed a reduction in anxiety, and continuing smokers increased in anxiety; these changes were significantly different between groups (Standardised mean difference (SMD): -0.33; 95%CI: -0.50 to -0.16,  $p=0.0001$ ). Both groups showed a reduction in depressive symptoms; the reduction was significantly greater in quitters (SMD: -0.25; 95%CI: -0.44 to -0.20,  $P=0.0001$ ).

*Interpretation*

Long-term smoking cessation is associated with an improvement in psychological outcomes. Our effect estimates are equal or larger to those of anti-depressant treatment for symptoms of depression and anxiety.

#### **46. Youth friendly general practice: rhetoric or (possible) reality?**

**Mandy Cheetham, Fuse: Centre for Translational Research in Public Health**

##### ***Abstract***

##### *The problem*

Young people consult their GP with increasing frequency as they move into young adulthood, yet satisfaction rates remain at best around 50%. For young people with co-existing mental health problems there are even greater obstacles to seeking help and developing a trusting relationship with a GP or practice nurse. GPs are seen as less interested and knowledgeable in mental health compared to physical health and keen to prescribe. Equally, GPs are reluctant to initiate conversations which address distress and anxious and uncertain about their practice. This matters because 75% of adult mental health problems are already manifest in adolescence yet the delay to detection is long, usually between 5-15 years. Furthermore, most ill-health in adolescence is preventable and health behaviour in the second decade of life has sequelae for adulthood. Health inequalities are strongly linked to health trends in this age group and youth friendly approaches to health promotion will produce long-term benefits.

##### *The approach*

We undertook a rapid review of the available evidence, much of which is published in the grey literature, to look at what has been proposed to address the barriers to, and enablers of, effective consultations between GPs and young people.

##### *Findings*

The You're Welcome Department of Health funded initiative suggests key areas for adaptation and change at practice level to achieve the 'quality mark' and improve accessibility and acceptability of health care for young people. The participation of young people is deemed critical to the success of initiatives, as recognized in the Teenage Health Demonstration Sites. It can have positive effects on health and wellbeing, result in improved responsive access, enhanced quality of health care and positive outcomes for staff and young people working in collaboration. We will draw on examples of regional initiatives led by young people to inform planning and delivery of quality health care. These will include, Right Here Brighton & Hove project (2102) and Our Health, Our Voice (2012) peer led research in Newcastle).

##### *Conclusion*



Parameters comparing improvements in young people's health against 0-10 year olds have shown a relative decline and an increase in long-term conditions, hospital admissions and health behaviours explained by health inequalities. UK General practice remains free for young people to access at the point of need and has the potential to offer brief behavioural interventions which support young people to make positive decisions about their health. This resource is under-used and young people continue to experience barriers to accessing youth-friendly healthcare. Learning from initiatives developed with strong participation and leadership from young people may be the key to unlocking the current gap between the rhetoric of offering youth friendly care and the reality.

**47. Comparing objectively assessed and self-reported measures of tobacco exposure: a smoking topography study**

**Jennifer Ware, University of Bristol; Nic Timpson, University of Bristol; Marianne van den Bree, Cardiff University; Marcus Munafò, University of Bristol**

***Abstract***

*Background*

A genetic variant within the nicotinic acetylcholine receptor gene cluster *CHRNA5-A3-B4* has been found to robustly associate with several smoking-related behaviours (e.g., smoking quantity, nicotine dependence) and smoking-related diseases (e.g., lung cancer). Recent work has also shown an association between this locus and circulating cotinine levels, the primary metabolite of nicotine. Furthermore, this association is robust to adjustments made for daily cigarette consumption. This suggests that even among equal cigarette consumers, there is genetically influenced variation in total nicotine exposure. Presumably this is due to variation in smoking topography (i.e., how a cigarette is smoked). We developed a protocol to determine potential mediation of the relationship between this locus and cotinine by smoking topography. Here we present the results of the pilot study, conducted in the absence of genetic data, intended to trial the protocol, determine likely ranges of responses on topography-based outcome measures, and to examine relationships between self-reported and objectively assessed measures of tobacco exposure.

*Methods*

Our sample consisted of nine current, daily smokers. Smoking topography data were collected using a smoking topography monitor – a small, self-contained, battery-operated device which measures ambulatory smoking behaviour. Data were collected in the participants' 'natural' environment over the course of 24 hours. Primary outcome measures were objectively assessed daily cigarette consumption, and total smoke inhalation volumes.

*Results and Conclusions*

Over the course of one day, participants consumed an average of 7.6 cigarettes (95% CI 4.5, 10.6; SD = 3.9), and inhaled a mean total volume of 5.16 l smoke (95% CI 2442, 7876; SD = 3534.7). Strong relationships were observed between the assessed tobacco exposure variables, although these were not perfect. For example, only 75% of the variance noted in total volume of smoke inhaled over the

course of one day was accounted for by objectively assessed cigarette consumption. Participants who inhaled very similar volumes of smoke over the course of one day varied considerably in cigarette consumption. This underlines the importance of using precise, objectively assessed measures of tobacco exposure, and has key implications for epidemiology and genetic association studies, including large genome-wide association studies of smoking behaviour, which typically rely on retrospective self-report measures rather than precise, objective measures of tobacco exposure.

*Acknowledgements*

This study was conducted whilst the first author was a Ph.D. student at Cardiff University. Supported by a Wellcome Trust studentship to the first author (JW), and Wellcome Trust grant #086684 (MM).

**48. Recognition of emotion in depressed patients: a meta-analytic review**

**Sally Adams, UKCTC: UK Centre for Tobacco Control Studies presenting on behalf of M.**

**Dalili, Ian Penton-Voak and Marcus Munafò**

Over 30 years of research has explored how depression is associated with facial emotion recognition. However, studies have investigated this relationship using various paradigms, multiple stimulus sets and several experimental tasks, thus rendering comparisons of results across studies difficult. Additionally, there has been little effort to determine the size of this effect and whether or not studies are being properly powered to detect it.

We conducted a meta-analysis to synthesize the findings across relevant studies for the recognition of emotion in depressed individuals compared to controls. Studies of facial emotion recognition which included depressed and control samples were identified up to the beginning of June 2013 utilizing PubMed and Web of Science. Studies using schematic or artistically rendered faces, neuroimaging studies and studies that included drug treatments were excluded.

Meta-analysis of  $k = 23$  independent samples, within a random-effects framework, indicated impaired recognition of emotion ( $k = 23$ ,  $d = -0.17$ , 95% CI  $-0.26$  to  $-0.08$ ,  $p < 0.001$ ). Critically, this was observed for anger, disgust, fear, happiness and surprise ( $ks = 8$  to  $23$ ,  $ds = -0.15$  to  $-0.39$ ,  $ps < 0.08$ ), but not sadness ( $k = 22$ ,  $d = -0.08$ , 95% CI  $-0.22$  to  $-0.07$ ,  $p = 0.29$ ). Sensitivity analysis indicated that no single study was disproportionately contributing to this pattern of results. Power analysis based on an effect size estimate of  $d = -0.17$  indicated that a sample size of approximately 545 cases and 545 controls would be required to detect this association with 80% power at an alpha level of 0.05.

These findings suggest that the emotion recognition impairment widely reported in the depression literature exists across all basic emotions except sadness, where recognition performance is spared. Moreover, the effect size is small, and studies to date have been considerably underpowered. There is therefore still a need for large, confirmatory studies to establish whether this association is robust.

**49. Effects of emotion recognition training on mood among individuals with high levels of depressive symptoms**

**Sally Adams, Meg Fluharty, M. Dalili, Ian Penton-Voak, Catherine Harmer, Emily Holmes, Marcus Munafò**

***Abstract***

Preliminary evidence suggests a beneficial effect of emotion recognition training on positive mood at 2-week follow-up following four consecutive days of training (1). The present project aims to establish the effects of emotion recognition training on mood in a sample of individuals with high levels of depressive symptoms over a 6-week follow-up period (2), and explore the neural mechanism of action of this intervention. We hypothesise that individuals randomised to receive an intervention designed to modify emotion perception designed to increase the perception of happiness over sadness in ambiguous expressions will show reduced depressive symptoms, and reduced amygdala response to negative facial expressions of emotion.

The project consists of two workstreams, the first (WS1) a Phase II clinical trial, and the second (WS2) a neuroimaging study to explore mechanism. We will recruit participants from the general population who report high levels of depressive symptoms (defined as a score  $\geq 14$  on the Beck Depression Inventory-II). They will attend a screening session and be randomised to intervention or control procedures, repeated five times over consecutive days. WS1 participants will attend follow up sessions taking place at 2-weeks and 6-weeks after training, while WS2 participants will have a brain scan at the end of the week. For WS1 our primary study outcome will be depressive symptoms, Beck Depression Inventory-II. For WS2 our primary study outcome will be amygdala response to negative facial expressions of emotion.

This study is of a novel cognitive bias modification technique that targets biases in emotional processing characteristic of depression, and can be delivered automatically via computer, Internet or Smartphone. It therefore has potential to be a valuable cost-effective adjunctive treatment for depression which may be used together with traditional psychotherapy, cognitive behavioural therapy and pharmacotherapy.

## Abstracts for Posters

1. Penton-Voak, I.S., Bate, H., Lewis, G. and Munafò, M.R. (2012). Effects of emotion perception training on mood in undergraduate students: randomised controlled trial. *British Journal of Psychiatry*, 201, 71-72.

2. Adams, S., Penton-Voak, I.S., Harmer, C., Holmes E. and Munafò M.R. (2013). Effects of emotion recognition training on mood among individuals with high levels of depressive symptoms: study protocol for a randomised controlled trial. *Trials*, 14, 161.

## **50. Characterising tobacco control mass media campaigns in England and Wales**

**Tessa Langley, UKCTCS: UK Centre for Tobacco Control Studies; Sarah Lewis, University of Nottingham; Ann McNeill, University of Nottingham; Lisa Szatkowski, University of Nottingham; Robert West, University College London; Anna Gilmore, University of Bath; Michelle Sims, University of Bath**

### ***Abstract***

#### *Background*

Evidence suggests that high-intensity tobacco control mass media campaigns featuring negative health effects messages that are varied and sustained over time are most effective at reducing smoking prevalence. We characterised government-funded tobacco control mass media campaigns in England and Wales between January 2004 and March 2010 (when a freeze on public health mass media campaigns was imposed) and explored whether the content and level of population exposure to campaigns has been in line with recommendations from the existing literature.

#### *Methods*

We developed a framework to characterise tobacco control adverts on television in terms of their aims and target audience, informational and emotional content and style, based on the COM-B and PRIME theories of behaviour change. We categorised all tobacco control adverts since 2004 using this framework. We calculated population-level exposure to different types of content using data on television ratings (TVRs), a standard measure of advertising exposure, for each advert.

#### *Results*

Between 2004 and 2010 tobacco control adverts were run in most months (70%). 89% of all tobacco control advertising was for smoking cessation. Half of this advertising featured why-to-quit messages warning of the negative consequences of smoking, while half contained how-to-quit messages. The majority (72%) of advertising featured acted scenes, while 17% of exposure was to testimonial-style adverts featuring real smokers.

#### *Conclusions*

The content of campaigns in England and Wales has broadly corresponded to recommendations from the existing literature in recent years. However, the intensity of campaigns may not have been sufficient to influence smoking prevalence.

**51. Family-based interventions to increase physical activity in young people: a systematic review *in progress***

**Helen Brown, CEDAR: Centre for Diet and Activity Research**

**52. Shifting the gravity of spending. Exploring methods for supporting public health commissioners in priority-setting to improve population health and address health inequalities**

**Linda Marks, Fuse: Centre for Translational Research in Public Health**