

part in the programme, of these 73% attended a screening clinic. Of these 64,104 were recalled for assessment. Of those recalled 81% did not have breast cancer, these women had a false-positive mammogram. The aim of this systematic review was to identify the psychological impact of false-positive screening mammograms and evidence for the effectiveness of interventions designed to reduce this.

**Methods** This was a systematic review using the principles of the Centre for Reviews and Dissemination in York.

All UK controlled studies and qualitative studies of women with a false-positive screening mammogram were included. The control group participants had normal mammograms. All psychological outcomes including returning for routine screening were permitted. Titles and abstracts were screened independently by two reviewers. Retrieved papers were reviewed and selected using the same independent process. Data were extracted by one reviewer and checked by another. Each included study was assessed for risk of bias.

**Results** The searches returned seven includable studies (7/4,423). Those using disease specific measures found that there could be enduring distress that lasted up to three years; the level of distress was related to the degree of invasiveness of the assessment. At three years the relative risks were, further mammography 1.28 (95% confidence interval 0.82 to 2.00), fine needle aspiration 1.80 (95% confidence interval 1.17 to 2.77), biopsy 2.07 (95% confidence interval 1.22 to 3.52). There was also an enduring impact for those put on early recall 1.82 (95% confidence interval 1.22 to 2.72). However, studies that used generic measures of anxiety and depression found no such impact up to three months after screening. The strongest evidence suggests that women with false-positive mammograms have an increased likelihood of failing to reattend for routine screening, relative risk 0.97 (95% confidence interval 0.96 to 0.98) compared to women with normal mammograms. No studies of women from different socio-economic or ethnic groups were found nor any published qualitative studies.

**Conclusion** Having a false-positive screening mammogram can cause breast cancer specific distress for up to three years. It is less likely there will be general anxiety or depression detectable at pathological levels. The degree of distress is related to the invasiveness of the assessment. Women with false-positive mammograms are less likely to return for routine assessment than those with normal ones.

### OP38 ACCOUNTING FOR NON-UP TAKE OF BOWEL CANCER SCREENING: A QUALITATIVE STUDY

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**Background** Since being established in 2006, the English NHS Bowel Cancer Screening Programme (NHS BCSP) offers the faecal occult blood (FOB) test to adults aged 60 – 74. This bowel cancer screening test is sent by post every two years to recipients who are required to provide six small samples of faeces from three bowel movements. The kit is returned by post to be tested for minute traces of blood that may be an early warning sign for the development of bowel cancer. Analysis shows that approximately 53% of people offered bowel cancer screening by FOB test take it up, and that uptake varies from 35% to 60% in the most and least deprived areas, respectively.

**Methods** We used a qualitative approach to explore views and experiences about bowel cancer screening in people who did not take part in the screening programme when invited to do so. We conducted 16 focus groups in London and South Yorkshire to generate extensive textual data, and analysed our data thematically using grounded theory techniques to explore and examine accounts of

non-uptake. Previous research examining ‘non-uptake’, of this and other medical interventions has identified considerable challenges in terms of identifying and recruiting individuals who may be defined in this way. We therefore used a novel recruitment approach, working with the National BCSP Hubs to identify and recruit ‘non-uptakers’ of bowel cancer screening. We present the findings from our thematic analysis of 16 focus groups undertaken with people who did not participate in bowel cancer screening and explore the complexity of ‘non-uptakers’ accounts.

**Results & Conclusion** During preliminary analyses, we identified common accounts through which participants rationalised non-uptake and which present one or several barriers to undertaking bowel cancer screening. Participants rationalised their non-uptake of screening in a number of ways, for example by making reference to perceptions of low personal risk informed by ‘feeling well’ or having had no family history of bowel cancer. Others expressed sophisticated doubts about the benefits or value of the FOB test specifically, or in relation to diagnostic or treatment interventions for cancer more generally. Finally, the necessity to provide samples of faeces to complete the FOB test emerged repeatedly as a troubling aspect of the bowel cancer screening methodology offered by the English NHS BCSP.

### OP39 PROTECTION BY BCG AGAINST TUBERCULOSIS: SYSTEMATIC REVIEW AND META-REGRESSION ANALYSIS

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**Setting** Reasons for variation in BCG protection against tuberculosis are not well understood. We therefore estimated the protection provided by BCG vaccination against tuberculosis and examined reasons for variation in different settings.

**Methods** We systematically searched English and non-English articles in 10 databases from inception to May 2009 as well as sources such as Google Scholar and trial registers to October 2009. Search terms included tuberculosis, tubercle bacill\*, *M. tuberculosis*, *M. bovis*, *M. africanum*, *M. canetti*, *M. microti* and *M. tuberculosis*. Terms for the intervention included BCG Vaccine, BCG, BCG Vacc\*, BCG Imm\*, bacillus calmette.

Two reviewers independently screened studies for inclusion. Data (including results and domains of study quality) were extracted by one reviewer and checked by another. Pooled analyses were based on random and fixed effects meta-analysis. Heterogeneity was quantified using tau-squared ( $\tau^2$ ) statistics. Random-effects meta-regression was used to investigate associations of study characteristics with intervention effect estimates.

**Results** Of 21,030 references we identified 21 trials reporting tuberculosis outcomes. Protection against tuberculosis disease was variable ( $\tau^2=0.292$ ). BCG efficacy was high at higher latitude or when BCG was given only to infants (62%, 95% CI 48–72%) or to children after strict screening for tuberculin sensitivity (72% 95% CI 60–81%) Protection against meningial and military tuberculosis combined was higher in infants (90%) and children with stringent testing respectively (92%). The observed protective effect of BCG did not differ by the strain of BCG vaccine used. Stringency of tuberculin testing to exclude those infected or sensitised to mycobacteria explained a good proportion of the observed variation with latitude ( $\tau^2=0.292$  in the null model, 0.100 in the bivariate model). In a multivariable meta-regression analysis there was strong evidence that infant vaccination or stringent prior tuberculin testing before BCG in childhood was associated with increased efficacy ( $p=0.02$ ) after taking into account latitude and a measure of study quality-diagnostic detection bias.

**Conclusion** BCG protection against tuberculosis varies between settings to an extent which cannot be attributed to chance alone. More efficacious results were seen in studies of individuals screened using stringent criteria (to exclude those already sensitized to mycobacteria), and those at a greater latitude from the equator.

**OP40 Selenium supplementation for the primary prevention of cardiovascular disease (CVD) – A COCHRANE SYSTEMATIC REVIEW**

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**Background** Selenium is a key component of a number of seleno-proteins which protect against oxidative stress and have the potential to prevent chronic diseases including CVD. However, observational studies have shown inconsistent associations between selenium intake and CVD risk; in addition there is concern around an increased risk of type 2 diabetes with high selenium exposure.

**Objective** To determine the effectiveness of selenium only supplementation for the primary prevention of CVD and examine potential adverse effects on type 2 diabetes.

**Methods** The following electronic databases were searched with no language restrictions from their inception to July 2011: MEDLINE, EMBASE, CINAHL, Web of Science, the Cochrane Library and trial registers. Studies were included if they fulfilled the following criteria: study design - RCTs, participants - free of CVD (includes those at high risk), intervention - selenium only supplementation, comparator - no intervention or placebo, outcomes - diagnosis of CVD or change in the risk factor profile for CVD (blood pressure, lipids) or adverse effects (type 2 diabetes). Two reviewers independently screened titles and abstracts, assessed shortlisted studies for formal inclusion/exclusion, abstracted data and assessed methodological quality. Data were analysed using RevMan 5.1 software.

**Results** Database searching resulted in 1310 hits of which 43 went forward for formal inclusion/exclusion; 9 RCTs met the inclusion criteria. Included trials were heterogeneous in the participants recruited, dose of selenium, intervention and follow-up periods, outcomes reported, country of recruitment and baseline selenium status. Meta-analysis was possible for 2 trials reporting clinical events, but the analysis was dominated by the SELECT trial which carried over 80% of the weight. There were no statistically significant effects of selenium supplementation on total mortality (RR 0.97, 95% CI 0.88, 1.08), CVD mortality (RR 0.97, 95% CI 0.79, 1.2) or non-fatal CVD events (RR 0.97, 95% CI 0.9, 1.05). Similarly, the SELECT trial dominated the findings from 3 trials reporting type 2 diabetes, where selenium supplementation increased the risk of type 2 diabetes (RR 1.06, 95% CI 0.97, 1.16) although this did not reach statistical significance. There were no statistically significant effects of selenium on total or HDL cholesterol (measured in 2 trials (5 intervention arms) with varying doses of selenium supplementation).

**Conclusion** There is still a lack of evidence of the effects of selenium supplementation in the primary prevention of CVD. More trial evidence is needed especially to clarify the potential adverse effect of selenium supplementation on type 2 diabetes.

## Population Based Studies: Early Life II

**OP41 BIRTH SIZE AND MORTALITY IN BREAST CANCER PATIENTS**

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**Background** Previous studies suggest that larger birth size is associated with a higher breast cancer incidence, but the few studies of birth measures and mortality in breast cancer cases have been inconclusive. The aim of this study was to investigate survival of women after breast cancer diagnosis (N=436) in the Uppsala Birth Cohort born in 1915–1929, who had detailed obstetric records available.

**Methods** Cox regression was used to calculate hazard ratios (HR) and their 95% confidence intervals (CIs) for death from any cause after a breast cancer diagnosis until the end of 2010. Cancer register diagnoses were available from 1958. The main exposures were birth measures: gestational age (GA), birth length (BL), and birth weight (BW) for GA. They were converted to standard deviation (SD) scores to ensure comparability of the effect sizes. Analyses were performed with and without adjustment for own adult socio-economic position (SEP) measured by education, occupation and income. Analyses were additionally adjusted for age at breast cancer diagnosis, decade of diagnosis, and age at first birth. Adjustment for family SEP at birth was considered but omitted since it did not affect the estimates and was not related to mortality after adjustment for other confounders.

**Results** In adjusted analyses, one SD increase in GA was associated with 7% (95% CI 2–12%) lower mortality and this association did not change after additional adjustments for BL or BW. There was no association between BL and mortality (adjusted HR=1.02 (0.91–1.16)). One SD increase in BW for GA was associated with 14% (1–29%) and 26% (9–46%) higher mortality without and with an additional adjustment for BL, respectively. Adjustment for SEP or other confounders did not substantially alter the estimates.

**Conclusion** Our results suggest that both low GA and high BW for GA predict a higher mortality in breast cancer cases. This study strengthens the current evidence that size at birth is related to breast cancer mortality as well as incidence. It also brings in new evidence of the inverse relationship between GA and breast cancer mortality that has not been reported before. The observed associations persisted after an adjustment for SEP, although breast cancer cases from lower SEP are known to have a poorer survival and also birth measures are socially patterned. Further studies are needed to investigate how the observed associations are mediated.

**OP42 LIFECOURSE SOCIOECONOMIC POSITION AND COGNITIVE FUNCTION IN LATER LIFE IN CENTRAL AND EASTERN EUROPE: PRELIMINARY FINDINGS FROM THE HAPIEE STUDY**

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**Background** Socioeconomic position (SEP) across the lifecourse is positively associated with cognitive function in later life in studies of Western populations, with later SEP likely mediating the effect of early life factors. However, it remains to be seen whether similar associations are observed in settings with markedly different social histories with apparently smaller income inequalities. This study aims to investigate the association between measures of SEP reflective of the lifecourse and cognitive function in mid and later life in three Central and Eastern European populations.

**Methods** Cross-sectional analysis of 7,990 men and women aged 45–69 years in 2002 from the Health, Alcohol and Psychosocial factors in Eastern Europe (HAPIEE) study recruited in Novosibirsk (Russia), Krakow (Poland), and six Czech towns using random probability sampling. Measures of lifecourse SEP included self-reported childhood socioeconomic conditions (parental education, ownership of household amenities at age 10), own education and current material circumstances. Linear regression was used to estimate the associations between lifecourse SEP measures and three