HL in all studies was 22.7% (95% CI 20.6%, 24.8%). The review identified associations between limited HL and socioeconomic factors (lower education attainment, lower income), and certain process and outcome measures (lower likelihood of referral for transplant, higher mortality). Overall study quality was poor, with particular weaknesses of sampling and non-response.

Conclusion Limited health literacy is common among people with CKD and independently associated with socioeconomic factors and health outcomes. It may represent an important determinant of inequality of outcomes in CKD. There is a need for further investigation of limited health literacy in people with pre-end stage CKD, and in UK CKD populations.

PS27 SERUM BILIRUBIN AND RISK OF CARDIOVASCULAR EVENTS AND DEATH IN A STATIN-TREATED POPULATION: A COHORT STUDY

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Background Serum bilirubin is an endogenous antioxidant with a strong genetic component that may be a marker for future cardiovascular disease (CVD) risk. We examined the relationship between serum bilirubin levels recorded prior to statin prescription, primarily as test for liver function, and the diagnosis or death from CVD. We also examined whether bilirubin levels increased following statin prescription independently of liver enzymes, which has been shown in animal models and could contribute to the purported health benefits of statins in addition to cholesterol reduction.

Methods All patients with liver function tests three months prior to first statin treatment between January 1st 2000 and December 31st 2010 and no history of liver disease or CVD were extracted from The Health Improvement Network (THIN) primary care database. Restricted cubic spline Poisson regressions were fitted on bilirubin levels and adjusted for traditional cardiovascular risk factors to estimate incidence rate ratios.

Results In total 130,052 patients met the inclusion criteria and after a median follow-up of 43 months, there were 5,938 coronary heart disease (CHD) events, 2,438 stroke events, and 5,185 deaths from any cause. In men, the incidence of CHD in the lowest decile category of bilirubin (1–6 μmol/L) was 176 per 10,000 person years (PYs) compared with 139 per 10,000 PYs in the highest decile (19–40 μmol/L). The result for stroke was 72 versus 52 per 10,000 PYs and for death 139 versus 92 per 10,000 PYs. Similar differences were seen for women. The adjusted associations with bilirubin were L-shaped with a negative relationship up to around 10–15 μmol/L. The models predicted that, compared to patients with the median bilirubin level (10 μmol/L), those with a similar CVD risk profile but a bilirubin level of 5 μmol/L had a 19% (95% CI: 11–27%) higher rates of CHD, a 22% (95% CI: 10–36%) higher rates of stroke, and a 26% (95% CI: 17–35%) higher rate of death. A dose-dependent increase in mean bilirubin level was seen following atorvastatin prescription but not for simvastatin.

Conclusion Low bilirubin prior to statin prescription is an independent risk factor for CVD and death. Further work is needed to examine whether pleotrpic effects of statins can be explained by alterations in bilirubin production and/or elimination.

PS28 IMPACT OF NUMBER AND TYPE OF COMORBIDITY ON DEPRESSION PREVALENCE AND HEALTH CARE COSTS. POPULATION-BASED COHORT STUDY

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Background The degree to which the number of comorbidities and the presence of depression impact health care use and costs has been unexplored employing actual resource use data representing a general population. We aimed to evaluate the impact of number and type of comorbidities on depression prevalence, health care utilisation and health care costs.

Methods Cohort study and included in the study were 300,020 participants aged 30 years of age registered with the UK General Practice Research Database. We used the UK General Practice Research Database to examine participants' diagnoses and resource use in primary and secondary care from 2005 to 2009. Healthcare unit costs and the costs of each individual prescription item were analysed.

Results In participants with no comorbidity, the age-standardised prevalence of depression was 7% in men and 14% in women. The likelihood of having depression increased in participants with single comorbidities including diabetes mellitus (men 13%, women 22%), CHD (men 15%, women 24%), stroke (men 14%, women 26%) or colorectal cancer (men 10%, women 21%). Patients with concurrent diabetes, CHD and stroke had a very high prevalence of depression (men 23%, women 49%) with women being more likely to suffer depression. Patients with a single comorbidity were 1.63 (95% confidence interval 1.59 to 1.66) times more likely to be depressed than those without comorbidity while those with two and three comorbidities were 1.96 (1.89 to 2.03) and 2.35 (2.03 to 2.59) times more likely. Depression increased the total costs of resources utilised per year in all participants across both genders, all age groups and across all comorbidities analysed in this study. Individuals with depression had higher total annual health care costs (males = £1014, females=£1212) than those without comorbidity or depression (males = £380, females = £517). Those with diabetes alone had £1144 for males and £1393 for females but £ 2534 for males and £ 3017 for females when depression was present alongside diabetes. When patients had diabetes, CHD and had suffered a stroke these patients' costs were £1541 for males and £1879 for females without depression and £3420 for males and £4072 for females with depression. Depression increased the associated cost of any comorbidity.

Conclusion The prevalence of depression appears to be more strongly determined by the number of comorbidities rather than the precise nature of the comorbid diagnoses. Additional costs of health care utilisation are considerably higher when depression is associated with single or multiple comorbidities.

PS29 YOUTH EXPOSURE TO ONLINE ALCOHOL ADVERTISING IN THE UK: AN ANALYSIS OF SOCIAL MEDIA WEBSITES

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Background There is increasing evidence that youth exposure to alcohol marketing is a risk factor for underage drinking. In 2011, online marketing became the largest channel for marketing for the first time, overtaking television. However, there is little understanding of the level of exposure of young people to online alcohol marketing.

Methods We obtained data on the top 3 social media sites in the UK for each month from December 2010 to May 2011, based on unique user figures, by gender and age (6–14, 15–24). We analysed the reach (the proportion of available internet users who used the site in each month) and impressions (the number of individual pages viewed on the site in each month) of the overall top three social media sites, Facebook, YouTube and Twitter in each demographic. Using data from the top 10 TV channels in the UK we identified 5 drinks brands, which had the highest TV advertising exposure to children (4–15) during this 6 month period. During February and March 2012, we examined each of these brands across the

3 social media sites. We analysed the brand presence and page content on each site and assessed the use and effectiveness of age restrictions.

Results Facebook was the most-used social media site, with an average reach across the observation period ranging from 39% in males aged 6–14 to 91% among females aged 15–24. The average impressions per month varied between 697 million and 2,717 million. YouTube had a similar average reach (41–81%) while Twitter had a considerably lower usage in the age groups studied. All 5 of the alcohol brands studied maintained a brand website, facebook page and twitter page, while 3 of the 5 also hosted a YouTube channel. Features such as the 'like' button on facebook and the use of competitions and games enable spread of brand engagement through the network.

Age restrictions to alcohol brand content varied across the sites. Facebook users under the age of 18 years were not able to access 'official' alcohol brand pages, although most user-generated content and some brand-generated applications were still accessible. By contrast, YouTube and Twitter did not maintain age-restriction with users of all ages able to view and interact with brand content.

Conclusion Social media sites are heavily used by children and young adults. Their exposure through these sites to alcohol marketing warrants intervention.

PS30 THE JOINT EFFECT OF UNEMPLOYMENT AND CYNICAL HOSTILITY ON ALL CAUSE MORTALITY

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Background Unemployment as well as hostility has been associated with mortality and morbidity. Hostility and socioeconomic position, including unemployment is highly associated. One of the hypothetical models on the relation between hostility, health and life context, states that hostility moderates the relationship between health problems and stressful conditions in the environment, such as unemployment. The aim of this study is to analyze the joint effect of labor market exclusion and hostility on all cause mortality.

Methods This study is based on The Danish Longitudinal Study on work, Unemployment and Health, a survey carried out in the Spring 2000 among a random sample of 40 and 50 year old men and women and an oversampled group of previously unemployed individuals. The survey included self-reported measures on employment, education, age and hostility, measured by the eight-item Cynical Distrust Scale.

The exposure variable was: 1) employed-not hostile ; 2) employed - hostile; 3) unemployed- not hostile and 4) unemployed - hostile. Outcome was defined as all-cause mortality. We used Cox's proportional hazard regression model, with age as the underlying time scale and with entry time January 1st 2000. All individuals who reported not working due to illness at the time of the survey were excluded in the analyses. The joint effect of unemployment and hostility was assessed as departure from multiplicativity.

Results Employed men and women who were hostile did not have an increased mortality risk. Unemployed men had an increased risk of mortality even when they were not hostile HR=2.30 (95% CI, 1.27–4.16) and the joint effect of unemployment and hostility was higher than what would have been expected from their separate effects, HR=2.57 (95% CI, 1.50–4.42). Unemployed women did not have a significantly increased mortality risk if they were not hostile HR=1.35 (95% CI, 0.73–2.50), however, the joint effect of unemployment and hostility was higher than what would have been expected from their separate effects, HR=2.23 (95% CI, 1.17–4.24).

Conclusion The joint effect of unemployment and hostility is a novel finding, indicating that the health damaging consequences of unemployment are accentuated by hostility.

PS31 PATTERNS OF PARTNERSHIP SMOKING DURING PREGNANCY

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Background Partner's smoking status is an important predictor of maternal smoking in pregnancy; however there are few UK-wide surveys which look at these effects. We investigated partnership smoking, quitting and cutting down during pregnancy in the UK's Millennium Cohort Study.

Methods We used multinomial logistic and linear regression to investigate retrospective self-reported smoking status and reductions in cigarettes smoked of mothers and their partners. All analyses were weighted for the complex sampling design and non-response, both unadjusted and adjusted for socio-demographic status.

Results Seventy-six percent of women had respondent partners, 22% were couples who both smoked around the time of the pregnancy (unweighted N=2,954). Of these smoking couples, 37% of women quit during their pregnancy, 41% cut down, and 23% smoked the same amount (persistent smokers), respective percentages for partners were 16%, 25% and 56%. Compared to women who quit, women who cut down were more likely to have a partner who was a persistent smoker (RRR 7.6, 95% CI 4.9 to 11.7), or a cut-down smoker (5.7, 3.8 to 8.5). Compared to persistent smokers, those who cut down were slightly heavier smokers (women mean difference 1.1 cigarettes/day, partners 2.0). Women who cut down reduced average consumption to 6.3 a day (mean reduction 9.3, 95% CI 9.0 to 9.8) and partners to 10.1 (8.7, 8.1 to 9.3). There was no difference in the effect of partners' persistent smoking on the risk of women cutting down or persistent smoking (P=0.38), but partner cutting down was a significantly larger predictor of women cutting down compared to women continuing to smoke (P=0.02). After reduction, women whose partners cut down smoked an average of 2.2 more cigarettes more than those whose partners quit (P=0.043). There was no evidence of variation in reduction for those who had partners who quit and those who were persistent smokers (d=0.87, P=0.42). **Results** were robust to adjustment for socio-demographics; fully adjusted results will be presented.

Conclusion Most women cut down and this was associated with partner cutdown, however this strategy was limited as partners were more likely to be persistent smokers. Significant reductions in the maternal number smoked were achieved, but the influence of partner smoking (whether persistent or cut down) may limit reduction. Cutting down as a strategy has questionable impact on in-utero exposure and may put at infants at risk for environmental tobacco smoke exposure postpartum. For maximum effect, partner and targeted couples interventions are warranted.

PS32 BREAST CANCER SCREENING UPTAKE IN DIFFERENT ETHNIC GROUPS IN LONDON

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Background Breast screening uptake is lower in London than other areas of England. Knowledge of cancer screening programmes varies between ethnic groups, and previous studies have shown variation in uptake between broad ethnic groups. This study aimed to determine whether breast cancer screening uptake varies between 16 ethnic groups in London.

Methods Information on women resident in London who were sent a breast cancer screening invitation between 31/03/2006 and 31/12/2009 was obtained from the London Quality Assurance