post-legislation in all countries. Proportions of samples containing <0.1ng/ml (i.e. undetectable) cotinine increased significantly (RR=1.63; 95%CI=1.45 to 1.83), from 31.0% to 41.0%. Although across the SES spectrum, there was no evidence of displacement of smoking into the home, socioeconomic inequality in the likelihood of samples containing detectable levels of cotinine increased (RR=1.10; 95%CI=1.05 to 1.16). Among children from the poorest and most affluent families respectively, 96.9% and 38.2% of post-legislation samples contained detectable cotinine. Socioeconomic gradients at higher exposure levels remained unchanged. Among children from the poorest families, 1 in 3 samples contained greater cotinine concentrations than Scottish bar worker's samples prior to legislation (3ng/ml). Smoking restrictions in homes and cars increased. However, little more than half (55.1%) of children, and only 19.3% of children of smokers, lived in smoke-free homes following legislation. Significant socioeconomic patterning remained, with 26.3% and 72.0% of children from the poorest and most affluent families respectively living in a smoke-free home.

Conclusion Urgent action is needed to reduce inequalities in SHS exposure. Such action should include emphasis on reducing smoking in cars and homes.

OP56 DIFFERENTIAL EFFECTS OF SMOKING CESSATION DURING PREGNANCY ON BIRTH WEIGHT IN A COHORT OF DISADVANTAGED WOMEN

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Background Smoking during pregnancy is recognized as the most important preventable risk factor. Maternal smoking accounts for 20–30% of low birth weight infants (<2,500g), the most common adverse outcome in pregnancy. The objective of this study was to explore the effects of maternal smoking habits: stopping smoking in the first and second trimesters, continuing to smoke, number of cigarettes smoked and socio-demographic factors on infant birth weight.

Methods The study was a longitudinal cohort study of 1,000 pregnant smokers attending public hospital clinics in a disadvantaged catchment area at first pre-natal visit (V1), and assessed at 28–32 weeks (V2) and at one week after birth (V3) using an interviewer-administered questionnaire. The primary outcome variables were: change in smoking status based on self-reported response and urinary cotinine measurement for those who had quit. ANOVA was carried out to test for differences in mean birth weight. A multiple regression analysis with birth weight as the dependent variable was carried out on demographic and smoking characteristics and derived smoking category variables at V3: sustained quitters, continued smokers, successful quitters at V3 and intermittent quitters.

Results The mean difference in birth weight between continued smokers and sustained quitters was significant, (mean difference = 233g, 95% CI=60 – 406g, p=0.008), as was the difference between continued smokers and intermittent quitters (mean difference = 202g, 95% CI =17 – 386g, p=0.03). Regression on baseline variables showed that only 2.4% of the variance (R²) was explained by smoking characteristics; that is, number of smokers in the home other than self or partner (p=0.008) and number of cigarettes smoked per day (p=0.02). A second regression model showed gestation at delivery to be the best predictor of birth weight (R²=44.2). The number of cigarettes smoked at V2 explained an additional 2.1% (p<0.001) and being a sustained quitter 0.5% (p=0.02).

Conclusion In this study a clear gradient was observed around smoking behaviour and birth weight with continued smokers

having infants with lowest birth weights, sustained quitters the highest and intermittent quitters somewhere in between. The study also demonstrated that the negative effects of maternal smoking on birth weight are at least partly reversible. It thus showed a beneficial effect of quitting smoking for at least part of pregnancy and a link between passive smoking and birth weight. These findings are important for the delivery of targeted health promotion messages to smoking women in early pregnancy.

Population Based Studies: Midlife

OP57 ALL-CAUSE AND CAUSE-SPECIFIC MORTALITY AMONG INDIVIDUALS WITH AND WITHOUT DIABETES IN ENGLAND AND SCOTLAND

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Background Although a growing body of evidence demonstrates an increase in cardiovascular disease (CVD) mortality among those with diabetes mellitus, the results related to other causes of death are less homogenous. The strength of the association between diabetes and mortality appears to differ by geographic location. The role that Body Mass Index (BMI) plays also requires further exploration. In the UK, one in 20 individuals is estimated to have diabetes. Therefore, even a small increase in mortality risk among those with diabetes, could result in a large number of deaths among those with the disease. This large general-population cohort study used data from England and Scotland to explore the associations between diabetes and risk of all-cause and cause-specific mortality, and examine the extent to which any increase was attributable to raised BMI.

Methods Nationally-representative, cross-sectional data from 15 years of the Health Survey for England (HSE) (1994–2005) and Scottish Health Survey (SHeS) (1995, 1998 and 2003) were linked with mortality records up to the first quarter of 2011. Odds ratios (OR) and 95% confidence intervals (CI) adjusted for age-group and sex (model 1), plus smoking status (model 2) and additionally for BMI category (model 3) were estimated using logistic and multinomial logistic regression. Participants mentioning cancer at baseline were excluded from the study.

Results Within this sample of 166,600 participants (5,131 with diabetes) there were 19,483 deaths (1,060 among those with diabetes, 18,423 without diabetes). All-cause mortality was greater among those with diabetes when adjusted for age, sex and smoking status (OR 1.52, 95% CI 1.41–1.65), with no reduction when adjusting for BMI category (OR 1.49, 1.37–1.64). Cause-specific mortality among those with diabetes was raised for CVD (model 2 OR 1.73, 1.55–1.93), cancer (1.24, 1.08–1.43) and 'Other' (1.77, 1.54–2.04) with a non-significant increase for respiratory diseases (1.21, CI 0.99–1.47). Additional adjustment for BMI had a minimal impact upon the excess mortality found among those with diabetes: CVD (OR 1.69, 1.49–1.93), cancer (1.24, 1.05–1.45), 'Other' causes (1.75, 1.49–2.07), and respiratory diseases (1.16, 0.92–1.47). Survival was also lower among those with diabetes compared with those without the disease at baseline.

Conclusion Diabetes is associated with an excess of all-cause and cause-specific mortality from CVD, cancer, and 'Other' causes but probably not respiratory diseases. Increased BMI does not appear to be a mediating factor within the association between diabetes and cause-specific mortality.

OP58 IS THE EXCESS RISK OF MYOCARDIAL INFARCTION AMONG PEOPLE WITH DIABETES FALLING OVER TIME?

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Background Incidence of myocardial infarction (MI) in the UK general population has declined considerably in recent years. However it is unclear whether the decline in MI risk has occurred among people with diabetes. People with diabetes have an estimated two-fold excess risk of MI, compared to those without diabetes. A differential trend in MI incidence among diabetic patients could correspond to a rise or fall in this excess risk, which has implications for prognosis and management of diabetes. We compared recent trends in MI incidence among those with and without diabetes in a representative UK population sample, and estimated the excess risk of MI among diabetic patients in different calendar periods.

Methods The population sample comprised 2,927,137 patients (49% men) aged 30 years and over, with no prior MI, from 434 general practices belonging to The Health Improvement Network (THIN) UK-wide primary care database in 1995–2008. Incidence of MI in 1995–1998 was compared with that 10 years later in 2005–2008. Rate ratios comparing incidence over these intervals were estimated from multi-level Poisson regression (patients nested in practices), with an indicator for time interval as a covariate, adjusting for age and gender, with practice as a random effect. An interaction between time interval and an indicator for diabetes was used to assess whether the rate ratios comparing intervals differed among those with and without diabetes, and equivalently whether the excess relative risk among diabetic patients has changed over time.

Results In 1995–1998 age-standardised incidence rates for MI (per 1000 person years) among those without and with diabetes were 3.22 (95% CI 3.10–3.34) and 9.56 (8.42–10.7) respectively. In 2005–2008, corresponding incidence rates were 1.47 (1.44–1.50) and 4.43 (4.23–4.65). Among people without diabetes, the rate ratio comparing incidence in 2005–2008 with 1995–1998 was 0.46 (0.44–0.48). Among people with diabetes, the corresponding rate ratio was 0.31 (0.28–0.35), indicating a greater decline in MI incidence over the period ($p < 0.001$ for interaction between interval and diabetes). Correspondingly, the rate ratio comparing incidence among those with diabetes to those without diabetes was attenuated from 2.70 (2.42–3.02) in 1995–1998 to 1.90 (1.80–2.00) in 2005–2008. Gender-specific analyses revealed the attenuation of the relative risks to be significant among both women and men.

Conclusion The excess risk of MI among diabetic patients appears to be falling over time. However, despite their improved prognosis, people with diabetes remain at a considerable excess risk of MI, emphasizing the need for continued concerted efforts to manage diabetes.

OP59 DO DEMANDS AND WORRIES FROM CLOSE SOCIAL RELATIONS INCREASE THE RISK OF SUBSEQUENT INCIDENT IHD HOSPITALIZATION? A 7 YEAR LONGITUDINAL STUDY OF MIDDLE-AGED DANISH MEN AND WOMEN

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Background The association between support from social relations and ischemic heart disease is well described, however the possible hazardous effects of negative aspects of social relations on cardiovascular health are less well known. The purpose of the present study was to analyze the possible influence of negative aspects of social relations (NASR) at baseline on the risk of development of ischemic heart disease (IHD) defined as incident hospitalized cases of acute myocardial infarction and chronic IHD during 7 year follow-up. NASR were defined as demands or worries from partner, children, family, and friends.

Methods Participants were included in a questionnaire-based study in 2000 and were a random sample ($N=6767$) of Danish men and women aged 40 or 50 years by October 1st 1999 from the Danish Longitudinal Study on Work, Unemployment and Health. Data for the present study are based on baseline questionnaire data in 2000 and register linked data from the period 2000–2007 on hospitalization for IHD (ICD10: I21–25). Cases of IHD (I21–25) four years prior to baseline were excluded from the analyses. In total 127 new cases of IHD were identified during follow-up.

Results Men who always or often experienced worries or demands from their partner had an increased risk of incident IHD compared to those who seldom/never experienced worries and demands $HR(95\%CI)=2.28(1.14–4.53)$ adjusted for age, socioeconomic status, cohabitation status, depressive symptoms, smoking and emotional support from all social relations. There was no association between demands/worries from partner and risk of development of IHD among women. Both men and women who experienced frequent worries and demands from their family (other than partner and children) were at increased risk of IHD $HR=1.76(1.10–2.81)$ adjusted for above mentioned covariates and gender. Demands and worries from children and friends were not associated with significantly increased risk of IHD although estimates were in the same direction as for demands/worries from partner and family.

Conclusion For men, frequent demands and worries from a partner seem to be associated with increased risk of incident IHD hospitalization during 7 year follow-up. Demands/worries from family are risk factors for both women and men. Adjustment for the level of social support from all social relations did not change these conclusions. These findings confirm earlier findings of an association between NASR and self-reported angina pectoris. The weaker findings for women may partly be explained by the substantially smaller number of cases in this middle-aged cohort.

OP60 RISK OF FUTURE DEPRESSION IN PEOPLE WHO ARE OBESE BUT METABOLICALLY HEALTHY: THE ENGLISH LONGITUDINAL STUDY OF AGEING

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Background There is some evidence to suggest that obesity is a risk factor for the development of depression, although this is not a universal finding. This discordance might be ascribed to the existence of a 'healthy obese phenotype' – that is, obesity in the absence of the associated burden of cardio-metabolic risk factors. We examined whether the association of obesity with depressive symptoms is dependent on the individual's metabolic health.

Methods Participants were 3851 men and women (aged 63.0 ± 8.9 yrs, 45.1% men) from the English Longitudinal Study of Ageing, a prospective study of community dwelling older adults. Obesity was defined as body mass index ≥ 30 kg/m². Based on blood pressure, HDL-cholesterol, triglycerides, glycated haemoglobin, and C-reactive protein, participants were classified as 'metabolically healthy' (0 or 1 metabolic abnormality) or 'unhealthy' (≥ 2 metabolic abnormalities). Depressive symptoms were assessed at baseline and at 2 years follow up using the 8-item Centre of Epidemiological Studies Depression (CES-D) scale.

Results Obesity prevalence was 27.5%, but 34.3% of this group was categorized as metabolically healthy at baseline. Relative to non-obese healthy participants, after adjustment for baseline CES-D score and other covariates, the metabolically unhealthy obese participants had elevated risk of depressive symptoms at follow-up (odds ratio $[OR] = 1.50$, 95% CI, 1.05 – 2.15), although the metabolically healthy obese did not ($OR=1.38$, 95% CI, 0.88 – 2.17). We repeated the main analysis after excluding 451 participants with existing depressive symptoms ($CES-D \geq 4$) at baseline. There were 238 incident cases of depression at follow up, and in comparison