infectious and parasitic (1.57, 1.07 to 2.29), genitourinary (1.46, 1.04 to 2.04), circulatory (1.07, 1.01 to 1.12), and external (non-medical) (1.17, 1.00 to 1.37) causes and decreased for deaths attributed to in situ, benign and unspecified neoplasms (0.60, 0.37 to 0.99). There was no clear relation between chemical exposure group and cause-specific mortality. The mortality of each group was lower than that of the general population (SMR 0.88, 0.85 to 0.90; 0.82, 0.80 to 0.84 respectively). 3457 cancers were reported in Porton Down veterans and 3380 in non-Porton Down veterans. While overall cancer morbidity was the same (RR 1.00, 95% CI 0.95 to 1.05), Porton Down veterans had higher rates of ill-defined malignant neoplasms (1.12; 1.02 to 1.22), in situ neoplasms (1.45; 1.06 to 2.00) and those of uncertain or unknown behaviour (1.32; 1.01 to 1.73).
Conclusions: Mortality was slightly higher in Porton Down than non-Porton Down veterans. With the lack of information on other important factors, such as smoking or service overseas, it is not possible to attribute the small excess mortality to chemical exposures at Porton Down. Overall cancer morbidity in Porton Down veterans was no different from that in non-Porton Down veterans.

048 EQUITY IN CANCER PATIENT SURVIVAL IN FINLAND

A Pokhrel, T Hakulinen. *Finnish Cancer Registry, Helsinki, Finland*

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Objectives: To study temporal, regional and education-related differences in cancer patient survival in Finland by site and sex.
Design: Population-based relative and cause-specific cancer survival analysis using the complete and period methods.
Setting: Five Cancer Control Regions (CCRs) comprising each of approximately one million population covering whole of Finland. Patients' level of education was studied using three classes: basic, secondary and higher obtained from population census made before diagnosis of cancer.
Participants: For regional survival, the patients were of those diagnosed with cancer in one of 14 most common primary sites in Finland in 1993–2005 and followed-up to the end of 2006. For education-related survival analyses, the patients diagnosed with cancer in 1971–2005 and vital status followed-up to the end of 2005 were considered.
Main outcome measure: The age-standardised relative (ASR) and cause-specific (ASC) survival estimates; the relative excess risk (RER) and cause-specific excess risk (CER) of death due to patients' cancer.
Results: There were no significant differences in the RERs between the five CCRs except for patients with cancers of the pancreas, and patients with non-localised cancers of the breast, corpus uteri and prostate. The differences observed in 1998–2001 period window for ovarian cancer patients had disappeared in 2003–2006. The higher and secondary level educated patients had much lower CER compared to those with the basic education except for leukaemia. Women showed lower CER compared to men in each cancer sites except for cancer of urinary bladder. In 1996-2005, the differences in 5-year ASC by education level among 19 cancer sites ranged from 3 to 20 percentage points between the higher and basic level for men and from 1 to 14 percent points for women. Between the secondary and basic level, this difference ranged from 1 to 13 percentage points for men and 1 to 8 percentage points for women. A similar pattern was observed also for patients diagnosed in 1971–1985 and 1986–1995.
Conclusions: There were practically no differences in cancer survival in Finland by Cancer Control Region except for few cancer sites, indicating a uniform performance by region. However, the CER and 5-year ASC showed a significant gradient between the highest and lowest levels of education. Women had a higher survival than the men. Despite the uniform geographical performance, there may be room for improvement in patient survival in Finland.

Friday 11 September

Parallel session C

Smoking

049 CAN NATIONAL SMOKING PREVALENCE BE MONITORED USING PRIMARY CARE MEDICAL RECORDS DATA?

[1]L Szatkowski, [1]T Coleman, [2]S Lewis, [2]A McNeill. *[1]Division of Primary Care, University of Nottingham, Nottingham, UK; [2]Division of Epidemiology and Public Health, University of Nottingham, Nottingham, UK*

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Background: Databases of electronic primary care records are widely used for research, but not currently as a source of national statistics on lifestyle issues such as smoking. There has been little contemporary research conducted into the quality of smoking data held within primary care, particularly since the introduction of the Quality and Outcomes Framework. This research is vital to assess the potential for using these large, longitudinal databases to monitor smoking trends.
Objectives: To compare smoking data recorded within The Health Improvement Network database (THIN) with the accepted ''gold standard'' for measuring smoking prevalence, to investigate the potential of using THIN data to track changes in smoking prevalence.
Methods: For 2000 to 2006, the annual prevalence of current, ex and never-smoking in THIN was determined, taking patients' most recent smoking-related Read codes for that year as indicative of their smoking status. These figures were compared with the expected prevalence calculated using indirect standardisation based on age, sex and country-specific smoking rates from the corresponding General Household Survey (GHS).
Results: There was generally good agreement between recording of current smoking in THIN and the expected prevalence as predicted using GHS smoking rates. For example, in 2006 the GHS-predicted prevalence of current smoking in the THIN population was 23.4% for men (women 20.7%), with 22.6% of men (19.8% women) actually being recorded as current smokers in their medical records. The recording of ex and never-smoking within THIN was less complete—for men the recorded prevalence of both ex and never smoking was approximately 10 percentage points lower than would be expected using GHS rates, and for women 5 percentage points lower. 17.4% of men and 8.0% of women in THIN in 2006 had no smoking status recorded in their electronic medical records.
Conclusions: These results suggest that primary care medical records within THIN can be used to identify current smokers possibly with enough accuracy for use in monitoring smoking prevalence nationally. However, recording of ex and never-smokers is less complete.

050 THE IMPACT OF IMPLEMENTATION OF SMOKE-FREE LEGISLATION IN ENGLAND ON COTININE LEVELS IN ADULTS

[1]H Wardle, [1]S Nicholson, [2]J Mindell, [1]R Craig. *[1]National Centre for Social Research (NatCen), London, UK; [2]Department of Epidemiology & Public Health, University College London, London, UK*

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Objective: To investigate the impact of the implementation on 1st July 2007 of smokefree legislation in England on tobacco smoke exposure and cotinine levels in non-smoking adults.
Design: Cross-sectional survey.
Setting: Private households in England.
Participants: Nationally-representative sample of 5330 (2585 male) self-reported non-smokers (never or ex-smokers) aged 16+ interviewed in the 2007 Health Survey for England; 3183 cotinine-validated non-smokers aged 16+ (1441 men) with a saliva sample.

Main Outcome Measures: Mean weekly duration of self-reported tobacco smoke exposure; geometric mean salivary cotinine. Cotinine is an excellent marker of exposure to tobacco. Low levels indicate exposure to other people's smoke; 12 ng/ml is the best cut-off for personal tobacco use. Analyses adjusted for the complex (stratified, clustered) sampling design and weighted for non-response to interview and saliva sample, as appropriate.
Results: Most adult non-smokers reported no-one smoked in the home most days (93% before and 95% after 1st July 2007). Non-smokers' mean self-reported exposure to tobacco smoke fell from 4.2 hrs (95% CI 3.6 to 4.9) before to 2.0 hrs (1.5 to 2.4) after 1st July in men and from 3.5 hrs (2.9 to 4.1) to 1.4 hrs (1.0 to 1.7) in women (both $p<0.001$). Exposure was inversely related to age-group but fell most in those with the highest exposure: from 5.9 hrs (4.9 to 6.9) to 2.8 hrs (2.3 to 3.3, $p<0.001$) aged 16–34 yrs; from 3.4 hrs (2.9 to 4.0) to 1.4 hrs (1.0 to 1.7, $p<0.001$) aged 35–64 yrs; and 2.1 hrs (1.5 to 2.7) to 0.9 hrs (0.4 to 1.4, $p = 0.002$) aged 65+. Similar falls occurred in all three NS-SEC groups: professional/managerial from 4.2 hrs (3.5 to 5.0) to 1.7 hrs (1.3 to 2.1); intermediate from 3.9 hrs (2.9 to 4.8) to 1.7 hrs (1.4 to 2.1); and routine/manual from 7.9 hrs (6.7 to 9.1) to 4.9 hrs (4.0 to 5.8) (all $p<0.001$). Overall, the proportion with undetectable salivary cotinine levels rose from 32% to 46% of cotinine-validated non-smokers. Geometric mean cotinine levels in cotinine-validated non-smoking adults fell from 0.20 ng/ml (95% CI 0.18 to 0.22) in the first half of 2007 to 0.14 ng/ml (0.13 to 0.15) after 1st July 2007 in men and from 0.19 ng/ml (0.17 to 0.21) to 0.12 ng/ml (0.11 to 0.13) respectively in women (both $p<0.001$). As with self-reported exposure, levels before July 2007 were highest in the youngest age-group, who experienced the largest falls: from 0.23 ng/ml to 0.15 ng/ml aged 16–34, $p<0.001$; 0.17 ng/ml to 0.11 ng/ml aged 35–64, $p<0.001$; and 0.17 ng/ml to 0.14 ng/ml aged 65+, $p = 0.001$. Similar, significant falls occurred in all three NS-SEC groups.
Conclusion: The legislation has been successful in its primary aim, to reduce the exposure of non-smokers to tobacco smoke pollution. It has decreased absolute inequalities.

051 THE BENEFITS OF STOPPING SMOKING

[1]K Pirie, [2]R Peto, [1]G Reeves, [1]V Beral, on behalf of the Million Women Study Collaborators[1]*Cancer Epidemiology Unit, University of Oxford, Oxford, UK;* [2]*Clinical Trial Service Unit, University of Oxford, Oxford, UK*

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Background: Although much is known about the effects of smoking, there is limited reliable information on the effects of stopping smoking on mortality.
Objectives: To investigate the association between stopping smoking and the risk of all-cause mortality and of cause specific mortality, including deaths due to cancer and vascular disease. In particular, to investigate how the risks for former smokers compare with those of lifelong non-smokers as the period of time since quitting smoking increases.
Design: Prospective cohort study.
Participants and Setting: 1.3 million UK women were recruited in 1996–2001, and were resurveyed around 3 years later with a 65% response rate. Women were included in these analyses ($n = 700\,000$) if they had completed both study questionnaires, and if smoking status was classified in the same way (current, former, never smoker) on both. Participants were followed prospectively for incident cancers and death through NHS cancer registration and death records.
Main Outcome Measures: Relative risks of all-cause and cause-specific mortality for former smokers compared with lifelong non-smokers, adjusting for age, region, socioeconomic status and body mass index.
Results: Women were followed up for a mean duration of 6.7 years, during which time 21 469 deaths occurred, including 12 588 deaths due to cancer and 4314 due to vascular disease. Current smokers were almost three times more likely to die from any cause than lifelong non-smokers (RR 2.8, 95% CI 2.7 to 2.9). The risk for former smokers declined with every decade that passed since stopping smoking, with women who had stopped 30 or more years ago at no greater risk of mortality than lifelong non-smokers (RR 1.0, 95% CI 0.9 to 1.1). Results will be presented according to time since stopping smoking, and by cause of mortality.
Conclusions: The Million Women Study is the largest study to date to examine the direct health effects of smoking, and the benefits of stopping, in women who have smoked throughout much of their adult lives. Much of the excess mortality risk associated with smoking is removed by stopping smoking, with former smokers who had not smoked for 30 years or more at no greater risk than women who had never smoked.

052 WEIGHT CHANGE OVER EIGHT YEARS IN RELATION TO BASELINE BODY MASS INDEX IN A COHORT OF CONTINUING AND QUITTING SMOKERS

[1]D Lycett, [1]P Aveyard, [2]M Munafo, [3]E Johnstone, [4]M Murphy. [1]*UK Centre for Tobacco Control Studies, Primary Care Clinical Sciences, University of Birmingham, Birmingham, UK;* [2]*Department of Experimental Psychology, University of Bristol, Bristol, UK;* [3]*Department of Clinical Pharmacology, University of Oxford, Oxford, UK;* [4]*Childhood Cancer Research Group, University of Oxford, Oxford, UK*

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Objective: To examine the effect of body mass index (BMI) on weight change over 8 years in a cohort of continuing smokers and a cohort that quit and remained abstinent.
Design: 8 year prospective cohort study.
Data Source: Participants smoking >15 cigarettes daily enrolled in a clinical trial of nicotine patch or placebo in Oxfordshire general practices and were reviewed 8 years later.
Population: 832 male and female participants. Abstainers were 85 participants who were biochemically proven abstinent at 3, 6, 12 months and 8 years. 613 people were smoking at each follow-up, 26 relapsed and 116 quit after 1 year.
Statistical Methods: Means, SDs, and 95% CIs were calculated for change in weight by smoking status. Linear regression analysis, using baseline BMI as an effect modifier, was used to investigate whether the effect of smoking status on weight change was dependent on baseline BMI in smokers and continuous abstainers. Modelling proceeded with separate regression equations for smokers and abstainers. Confounding variables were adjusted for.
Results: Abstainers gained 8.79 kg (SD 6.36, 95% CI 7.42 to 10.17). Smokers gained 2.24 kg (6.65, 95% CI 1.7 to 2.77). Relapsers gained 3.28 kg (7.16, 95% CI 0.328 to 6.24). Later abstainers gained 8.33 kg (8.04, 95% CI 6.85 to 9.81). The difference in weight gain (6.56 kg, 95% CI 5.05 to 8.06, $p<0.001$) between abstainers and smokers was modified by baseline BMI. In abstainers a positive quadratic relationship of BMI fit best, resulting in a J-shaped curve. In persistent smokers there was a negative linear relationship of BMI ($p<0.001$). The model predicted that abstainers with a baseline BMI of 18 would gain 6 kg, with a BMI of 23 gain 5 kg, and with a BMI of 33 gain 14 kg more than would have been the case had they continued smoking for eight years.
Conclusions: Obese smokers who continue smoking are likely to not change or lose weight over eight years while obese people who quit are likely to gain the most weight. Weight gain is not as harmful as continuing smoking, but weight gain prevention interventions for obese people trying to stop smoking are needed.