

presentation of symptoms to a medical practitioner is recognised as part of the problem. This paper investigates response to symptoms of lung cancer in order to identify areas in which interventions have potential to increase early consultation.

**Methods:** Qualitative interviews were conducted with 42 people with lung cancer who had taken part in a quantitative interview survey. Interviews focused on symptoms and response prior to initial presentation and diagnosis. An integrated model of help-seeking behaviour was developed with reference to sociological and psychological theories to inform data analysis. Respondents who consulted within 12 weeks of symptom on-set were distinguished from those who did not and evidence of difference in their accounts sought.

**Findings:** Sociological and psychological models of response to symptoms are remarkably similar. "Domains" of response included the nature of symptoms, explanations for them, descriptions of action taken over time and prompting to respond from a family member. Respondents reported drawing on existing knowledge of symptoms, their likely cause and perceptions of personal risk. The nature of symptoms (acute, severe, chronic) was reported as influential as were family members who noticed symptoms. Causal theorising was ubiquitous and included explanations for symptoms in relation to cause and label; likely consequences; perceptions of control; consequences and how long it was likely to last. Actions included self-medication and "wait and see" strategies which were reassessed over time. People who consulted within 12 weeks of onset described symptoms that were largely *acute* and noticed by others but otherwise no differences were apparent. Smokers in particular reported unrealistic optimism of personal risk of lung cancer.

**Conclusions:** Models of illness behaviour from different social science disciplines can be integrated and used to frame understanding of reports of response to symptoms of lung cancer. Knowledge of symptoms is not wide-spread and symptoms attributable to benign causes unless acute or severe. Family members and other play an important role in prompting response. Interventions can target knowledge and the role of others in the context of theories of behaviour change.

#### 046 THE COST OF HAVING CANCER: A SURVEY OF PATIENTS WITH CANCER IN IRELAND

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**Objectives:** Although awareness is growing that a cancer diagnosis may have an adverse financial impact on some patients, few studies have been carried out to date. Although costs are likely to be multi-dimensional, most studies have investigated single dimensions, such as employment or travel costs. We aimed to: (1) quantify the proportion of patients incurring cancer-related additional expenditure or financial difficulties; (2) identify patient sub-groups at greatest risk of cancer-related additional expenditure/financial difficulties; and (3) assess monetary and psychosocial consequences of cancer-related additional expenditure.

**Methods:** The study setting was Ireland, which has a mixed public-private healthcare system. A postal questionnaire was developed from literature review and qualitative interviews with hospital-based oncology social workers and cancer survivors. Questionnaire topics included: expenses incurred (e.g. hospital parking, prescriptions, GP visits, household utilities, etc.) and impact of cancer on income/benefits, meeting mortgage/loan payments, and household ability to make ends meet. The questionnaire also assessed levels of

concern about household financial situation since diagnosis with cancer, and depression, stress and anxiety (using the DASS). Individuals with a primary breast, prostate, or lung cancer diagnosed within the previous 18 months were identified from the National Cancer Registry, Ireland and invited to complete the questionnaire during June-September 2008.

**Results:** 740 completed questionnaires were received (response rate = 54%). Respondents had extra costs associated with travelling to hospital appointments (71%), parking (52%), GP visits (36%), consultant visits (45%), physiotherapy (9%) and counselling (6%). 59% reported increased household bills due to their cancer diagnosis. Meeting mortgage or loan payments was more difficult for 43% and 57% respectively. 30% of respondents reported decreased income. The consequences of additional expenses included: using savings (55% used some or all of their savings); borrowing money (11%); reduced spending on "extras" such as take-away meals (21%). One third was more concerned about their household's financial situation; this did not vary by socio-demographic factors. For 44% of patients the cancer diagnosis had made it more difficult for their household to make ends meet. This percentage was higher amongst patients who were younger, of working age, or had dependents. Those who reported more difficulty in making ends meet were significantly more likely to be depressed, stressed or anxious ( $p < 0.01$ ).

**Conclusions:** Most patients/families incur cancer-related additional costs. For some, these costs are substantial. The consequences of this additional expenditure are wide-ranging. These findings have important implications for patient support organisations, health and social services and policy makers.

#### 047 MORTALITY AND CANCER MORBIDITY IN A COHORT OF BRITISH MILITARY VETERANS INCLUDED IN CHEMICAL WARFARE AGENT EXPERIMENTS AT PORTON DOWN

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**Objective:** To study whether there may be long-term effects on the mortality and cancer morbidity of participants in experimental research related to chemical warfare agents conducted at the UK research facility at Porton Down.

**Design:** Historical cohort study.

**Setting and Participants:** 18 276 male members of the UK armed forces who spent one or more short periods at Porton Down between 1941 and 1989 and a comparison group of 17 600 non-Porton Down veterans followed to 31 December, 2004. All veterans were considered for the cancer analyses, excluding those known to have died or been lost to follow-up before 1 January 1971: 17 013 Porton Down and 16 520 non-Porton Down veterans.

**Main Outcome Measures:** Mortality and cancer rates in Porton Down veterans were compared to those of non-Porton Down veterans and the general population, adjusted for age and calendar period.

**Results:** Porton Down and non-Porton Down veterans were similar in military and demographic characteristics. Year of enlistment was the same (median = 1951) but the Porton Down veterans had longer military service (median = 6.2 vs 5.0 years). After a median follow-up of 43 years, 7306 and 6900 respectively had died. All-cause mortality was slightly greater in Porton Down veterans (RR 1.06, 95% CI 1.03 to 1.10,  $p < 0.001$ ), more so for deaths outside the UK (1.26, 1.09 to 1.46). Of 12 cause-specific groups examined, RRs were increased for deaths attributed to

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

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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?

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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

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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.