

## Abstracts

A sensitivity analysis similar to 2, but based on the case-cohort study of lung cancer included in the NCI cohort study.

A pooled analysis of individual-level data from the two existing US historical cohort mortality studies of AN-exposed workers, the NCI cohort and the DuPont Company cohort of two AN production sites.

**Results** We will report current progress and available results from our series of investigations.

160

# PRELIMINARY RESULTS OF A CASE-CONTROL STUDY OF NIGHT SHIFT WORK AND BREAST CANCER AMONG HONG KONG WOMEN

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**Objectives** Breast cancer is the leading cause of cancer morbidity and mortality among women in Hong Kong, and the rate is accelerating. Meanwhile, the prevalence of night shift work in Hong Kong women is also increasing. We aim to present the preliminary results of an ongoing case-control study of breast cancer among Hong Kong women in the EPI-COH 2.0.13.

**Methods** We are consecutively recruiting all newly diagnosed breast cancer cases and age-matched controls from several hospitals and we expect to collect 1,066 cases and 1,066 controls by the end of 2013. A standardised questionnaire was used to collect information on each participant's lifetime exposure to night shift work, exposure to light at night, sleep disorders, environmental exposures to pesticides and other EDCs, occupational exposures, reproductive and anthropometric factors, smoking, diet, alcohol drinking, family cancer history, etc.

**Results** We have obtained 350 breast cancer cases and 350 controls with a response rate of 92%. The age distribution at the diagnosis of breast cancer ( $55.1 \pm 11.9$  vs.  $54.2 \pm 14.6$ ,  $p = 0.39$ ) and the menopause status (61.9% vs. 61.0%,  $p = 0.84$ ) for the cases and controls are comparable. A slightly more controls (92.2%) than the cases (89.9%) are the never smokers. Around 80% cases have records of estrogen receptor (ER) status and 73.3% of them are ER positive, while 52% are positive in progesterone receptor. The proportion of ever exposure of night shift work tends to be low (10%) and this proportion is not significantly higher in cases.

**Conclusions** This study showed preliminary results regarding the basic characteristics of an ongoing case-control study of breast cancer in Hong Kong women. In addition to patient interview, we have also collected blood samples. We shall be able to present more valuable data in the upcoming EPICOH.

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161

# NIGHT-SHIFT WORK AND CHRONIC LYMPHOCYTIC LEUKAEMIA RISK

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**Objectives** Chronic lymphocytic leukaemia (CLL) prognosis has been related to several alterations in the circadian molecular signalling. Other evidences suggest that night work may increase mature B-cell neoplasms risk. Although CLL was considered as an independent diagnostic entity for about a century, it is currently considered a mature B-cell neoplasm subtype. However, no epidemiologic data exists in regard to night work and CLL risk to date. We aim to determine if night work is a risk factor for CLL.

**Methods** We evaluated 521 cases and 1,511 controls in four areas of Spain within the population-based multi-case-control study MCC-Spain ([www.mccspain.org](http://www.mccspain.org)) in collaboration with the International Cancer Genome Consortium of CLL ([www.icgc.org](http://www.icgc.org)). Participants were interviewed face-to-face by trained interviewers for information on socio-demographic factors, reproductive, familial, medical and occupational history, and other lifestyle factors. The occupational section included questions for each job that was held for one year or longer, including shifts, years of debut and end, and amount of hours worked each day. We used logistic regression adjusting for potential confounders.

**Results** 62 cases (12%) and 154 controls (10%) had at least one permanent night job, and 48 cases (9%) and 178 controls (12%) had worked in a job with four or more nights/month and/or with 20% of the work performed by night. None of these two categories was associated to LLC risk (OR = 0.95 95%CI = 0.68 to 1.34 for permanent night and OR = 0.79 95%CI = 0.55 to 1.15 for rotating night shifts compared to day work, respectively). ORs were higher among subjects working more than 5 years in permanent night shift, but results were not significant.

**Conclusions** Our data suggest that night work does not play a significant role in CLL aetiology. The interpretation of these results may be hampered by the low sample size exposed to long term night work.

162

# USING CARCINOGENIC CLASSIFICATIONS OF PESTICIDES TO EVALUATE THE RISK OF SELECT CANCERS IN CANADIAN MEN

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**Objective** To examine possible associations between exposure to pesticides classified by their carcinogenicity and the risk of select cancers in Canadian men.

**Methods** Between 1991 and 1994, data were collected in six provinces using paper and telephone questionnaires from cases with incident non-Hodgkin lymphoma (NHL) (N = 513), multiple myeloma (MM) (N = 342), soft tissue sarcoma (STS) (N = 357), and Hodgkin lymphoma (HL) (N = 316) and a random, population-based sample of 1506 age- and province-matched controls. Pesticides were grouped into carcinogenic categories using a composite score created from evaluations by the International Agency for Research on Cancer (IARC) and US Environmental Protection Agency (US EPA). Pesticides were categorised as "probably" carcinogenic (IARC Group 2A and/or US EPA Group B and higher) or "possibly" carcinogenic (IARC Group

2B and/or US EPA Group C and higher). Logistic regression was used to calculate odds ratios (ORs) and 95% confidence intervals (CIs). Models were adjusted for age, province, and use of a proxy respondent.

**Results** Nearly 20 “probably” and 50 “possibly” carcinogenic pesticides were reportedly used by participants. Men who used any “probably” carcinogenic pesticide had increased odds for NHL (OR = 1.63, 95% CI: 1.23–2.16) and MM (OR = 1.56, 95% CI: 1.12–2.18), but not for STS (OR = 1.13; 95% CI: 0.81–1.58) and HL (OR = 0.99, 95% CI: 0.66–1.48) relative to men who did not use these pesticides. Similarly, men who used any “possibly” carcinogenic pesticide had higher odds for NHL (OR = 1.54, 95% CI: 1.21–1.96) and MM (OR = 1.36, 95% CI: 1.02–1.81), but not for STS (OR = 1.02, 95% CI: 0.77–1.35) and HL (OR = 0.97, 95% CI: 0.70–1.33).

**Conclusions** The use of any carcinogenic pesticide was associated with modest increases in odds for NHL and MM, but not for STS and HD. The ORs were slightly larger from use of “probably” compared to “possibly” carcinogenic pesticides. These results are consistent with IARC and US EPA pesticide classifications.

#### 163 RISK OF MAJOR LYMPHOMA SUBTYPES AND USE OF MOBILE PHONES

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**Introduction** Recent case-control studies have suggested an increase in risk of non Hodgkin Lymphoma (NHL) among mobile phone users. We explored the association in a case-control study conducted in Sardinia Italy in 1999–2004. **Methods.** Three hundred twenty two adult (age range 25–75) cases, first diagnosed with lymphoma along the study period, and 422 controls, randomly selected from population Registrars, frequency matched to cases by age, gender and local health unit of residence, participated to the study. In person interviews gathered information on data and age of purchase of a mobile telephone and duration of its daily use. We conducted unconditional logistic regression analysis in 322 lymphoma cases and 446 population controls, adjusting by age, gender and education.

**Results** Risk of lymphoma (all types; OR = 1.5; 95%CI 1.0 - 2.1), and particularly chronic lymphocytic leukaemia (OR = 1.8; 95%CI 1.0 - 3.4) was elevated in subjects reporting use of mobile phones, but it decreased with duration of use, and it was more elevated for the most recent purchases and for age at first purchase<sup>3</sup> 56 years.

**Conclusions** Our findings contradict some assumptions about the association between use of mobile phones and cancer risk. Information bias possibly played a role Overall, our study cannot provide support to the aetiological nature of the observed associations.

#### 164 CANCER INCIDENCE IN A COHORT OF BIOLOGY RESEARCH LABORATORY WORKERS IN THE NETHERLANDS

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**Objectives** Research laboratory personnel is exposed to a wide variety of carcinogenic agents. The link between biological research work and a possible increased cancer risk has been studied in several European countries. We examined the incidence of cancer among persons employed in Dutch biology research laboratories, particularly cancer of the pancreas, brain, breast, and lung and non-Hodgkin's lymphoma.

**Methods** In a historical cohort study, 7307 laboratory workers employed in four Dutch institutions between 1960 and 1992 were followed for incidence of cancer and mortality from 1989 to 2009 based on linkage with the Netherlands Cancer Registry. Information on the agents used in the research laboratories was obtained by a questionnaire sent to 2536 participants (64% response) and by another questionnaire completed by 98 laboratory heads. Cancer incidence was compared with the general population via standardised incidence ratios (SIR). Internal comparisons of laboratory workers with a control group of 2404 unexposed employees of the same institutions were based on Cox regression.

**Results** During follow-up (mean duration, 16.6 years), 809 cancers were observed among exposed and unexposed cohort members, which affords 80% power to detect a SIR of 1.1 for all cancers among the laboratory workers and a hazard ratio of roughly 1.3 for laboratory workers compared with the unexposed group. Analyses by duration of employment, type of research lab, and job title are ongoing. Results on cancer mortality until 1995 have been previously published (Cancer Causes Control 2004;15(1):55–66). No increased cancer mortality risks were observed compared to the general population. However, based on internal comparisons, risks were elevated for several sites, particularly lung cancer.

**Conclusions** Strength of this cohort are the long follow-up and large size, including a sizeable control group. This allows external comparisons of cancer incidence with the general Dutch population as well as internal comparisons with similar, however unexposed, workers.

#### 165 BREAST AND CERVICAL CANCER SCREENING UTILISATION AMONG INSURED FEMALE EMPLOYEES AT A LARGE US COMPANY

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**Objectives** Female employees enrolled in a company-sponsored health insurance plan are eligible to receive preventive care benefits. We examined the utilisation of recommended screening tests for breast and cervical cancer among female employees of a large U. S. company.

**Methods** Using health insurance claims data, we identified female employees who were continuously enrolled from 2009 through 2011. The prevalence of biennial screening mammography among employees aged 40 to 64 years and the prevalence of Pap tests in the past three years among employees aged 21 to 64 years were calculated for groups defined by demographic and work characteristics.

**Results** Among 3,972 female employees aged 40 to 64 years, 62% had at least one screening mammography in 2010 or 2011. Screening mammography utilisation did not differ substantially by race, marital status, pay-type or work location. Screening mammography utilisation was higher among employees aged 50 to 64 years (65%) compared to those aged 40 to 49 years (57%) and was higher among employees with day work schedules (64%) compared to those with rotating work schedules (51%).