

## Poster sessions

### 001 TELECONSULTATION FOR ACCOMPLISHMENT OF INTRAVENOUS THROMBOLYSIS IN ACUTE MYOCARDIAL INFARCTION AT LOCAL EMERGENCY LEVEL IN RIO DE JANEIRO, BRAZIL

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**Introduction:** We previously described a loss of opportunity for thrombolytic use in acute myocardial infarction (AMI) in Rio de Janeiro, Brazil.

**Objective:** To describe the experience of a teleconsultation programme (TIET) for evaluating intravenous thrombolytic indication at small local level emergency units and subsequent transfer to a reference coronary care unit (CCU), as part of a programme to decrease thrombolytic use in the public health system of Rio de Janeiro.

**Methods:** We studied a cohort of 618 AMI patients consecutively admitted in the reference CCU from July 1999 to November 2003. The teleconsultation system consisted of fax analysis of the electrocardiogram sent by the local clinical unit, together with a standard form. The local unit was encouraged to initiate thrombolysis as soon as possible. We performed descriptive statistical analysis and multivariate logistic regression, with estimation of odds ratio (OR) and 95% confidence intervals (95% CI).

**Results:** Of the 517 patients with ST segment elevation, in hospital mortality was 13%; among 101 AMI cases without ST elevations, mortality was 4%. Of the 359 patients admitted through the TIET programme (58.1% of the total group), 317 had acute ST elevation. The mortality among these 317 patients was 10.4%, versus 17% in the 200 non-TIET group with ST elevation in AMI (OR 0.6; 95% CI 0.3 to 0.98;  $p=0.04$  favouring TIET). Among the TIET group with ST elevation in AMI, 41.3% received thrombolytics, versus 25% in the non-TIET group (OR 2.1; 95% CI 1.4 to 3.1;  $p=0.0001$ ). Among the 181 patients who received intravenous thrombolytics, 47% were treated at the local unit. A smaller mortality (7.1%) was associated with patients receiving thrombolytics at the first attendance level (versus 11.5% in those who received the treatment in CCU). The logistic regression showed a tendency to a smaller mortality associated with thrombolytic use (adjusted OR 0.5; 95% CI 0.3 to 1.09;  $p=0.08$ ). This tendency was more evident for thrombolysis at the local level (adjusted OR 0.3; 95% CI 0.1 to 1;  $p=0.06$ ) than for thrombolysis in the reference CCU (adjusted OR 0.7; 95% CI 0.3 to 1.6;  $p=0.43$ ).

**Conclusions:** The results suggest that the programme favoured a more precocious and safe intervention at the first emergency attendance level, with a possible benefit on survival. The programme proved to be simple and without additional cost for the healthcare system.

### 002 FACTORS ASSOCIATED WITH CAESAREAN SECTION IN BRAZIL

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**Introduction:** Brazil has one of the highest rates of caesarean section in the world. The determinants of caesarean section are related to maternal and fetal conditions and also to non-medical reasons such as physician and maternal convenience.

**Objective:** The objective of the present investigation was to study maternal, social, and medical hospital variables in an attempt to identify the factors responsible for the discrepancy in caesarean section rates in the city of Ribeirão Preto, located in the wealthiest area of southeast Brazil.

**Methods:** The study design used was a retrospective analysis of all single live births at two hospitals in 1999, corresponding to almost 70% of all the deliveries in the city (5800/8330). Maternity A exclusively provides care for pregnant women covered by the public health system and Maternity B provides care for women belonging to the private system, including patients covered by private health insurance. Data were analysed statistically by the  $\chi^2$  test for the comparison of

proportions and by univariate and multiple logistic regression analysis to determine the independent variables related to the caesarean deliveries.

**Results:** The rates of caesarean delivery were 18.9% and 84.3% at A and B, respectively. Maternity A presented higher proportions of more unfavourable indicators such as adolescent mothers (27.6% versus 5.4%), low maternal educational level (77.9% versus 19.4%), mothers without a cohabiting companion (68.3% versus 15.3%), those with a larger number of children, and those with a greater proportion of obstetric diseases compared with Maternity B. A strong association was detected between caesarean section and coverage by private health insurance at maternity B, with higher rates for women of higher educational level and progressively increasing with age at both hospitals. The highest proportion of caesarean deliveries was observed among patients who had received prenatal care and had been delivered by the same doctor who provided the prenatal care. The convenience of a programmed surgical delivery for the doctor was demonstrated at Maternity B by the distribution of deliveries at well defined times (daylight hours) and on weekdays, with a marked reduction during weekends.

**Conclusions:** These findings suggest the idea that surgical deliveries were mostly performed without a medical indication at Maternity B.

### 003 CONSUMPTION OF OLIVE OIL AND INCIDENCE OF HYPERTENSION: THE SUN STUDY

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**Introduction:** The intake of some fatty acids has been associated with a decrease in blood pressure. Particularly, n-3 polyunsaturated fatty acids and monounsaturated fatty acids (MUFA) have shown a beneficial effect on blood pressure. MUFA rich olive oil is the major fat source in Mediterranean diets. However, the relationship between olive oil consumption and the risk of hypertension has not been evaluated in large cohort studies.

**Objective:** We evaluated the association between olive oil consumption and the incidence of hypertension in the SUN Study.

**Methods:** The SUN (Seguimiento Universidad de Navarra) Study is an open enrolment cohort currently comprising 13 500 university graduates, recruited and followed up through biennial mailed questionnaires. Diet was evaluated at baseline with a semiquantitative food frequency questionnaire, previously validated in Spain. In the initial questionnaire, information about other risk factors for hypertension and cardiovascular disease was collected, as well as the presence of these conditions. In the first follow up questionnaire, information about a new diagnosis of hypertension made by a physician was requested. To assess the relationship between olive oil consumption and risk of hypertension, a Cox proportional hazards model was used, considering quintiles of energy-adjusted olive oil intake as the main exposure and a new diagnosis of hypertension as the outcome. Hazard ratios (HR) and their 95% confidence interval (CI) for quintiles of energy adjusted olive oil consumption were calculated considering the first quintile as the reference category.

**Results:** The follow up rate for a median of 28.5 months was 88.4% after five mailings. We identified 118 new cases of hypertension among 4825 participants included in this analysis, accounting for a total study base of 11 003 person years. The HR (95% CI) of incident hypertension for the second, third, fourth and fifth quintiles were 0.60 (0.34 to 1.04), 0.70 (0.41 to 1.18), 0.48 (0.27 to 0.86), and 0.79 (0.48 to 1.32) respectively after adjusting for gender, age, physical activity, body mass index, total energy intake, sodium intake, alcohol intake, and other dietary exposures. There was no linear trend among categories of olive oil consumption. When the four upper quintiles were merged in a single category, the HR (95% CI) of hypertension was 0.63 (0.42 to 0.96) compared with the lowest quintile.

**Conclusions:** Moderate olive oil consumption is inversely associated with the risk of hypertension in a Spanish cohort of university graduates. Our data suggest a threshold effect in the dose-response relationship between olive oil intake and the risk of hypertension.

### 004 CHILD HEALTH CARE: MATERNAL AND HEALTH PROFESSIONAL ATTITUDES IN VIANA DO CASTELO DISTRICT, PORTUGAL

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**Introduction:** The first years of life are considered a prime period for the detection of health problems. In the European Union (EU) for more than 3 decades, there has been a sustained downward trend in perinatal, neonatal, and infant mortality rates, with an apparent levelling off in the most recent years. Portugal experienced a great reduction in all these mortality rates in the same period. The gap between the Portuguese figures and the EU averages was very wide in the 1970s but is now very narrow. Viana do Castelo followed the same trends but still presents a very high level for these indicators compared with the "best" EU countries, thus the Viana do Castelo Health Services need to perform further developments in child care.

**Objective:** To understand maternal and health professional attitudes regarding child healthcare.

**Methods:** A cohort study was carried out with a representative sample (n=453) of Viana do Castelo population of births stratified by municipalities. Data was collected: (a) from health centre child registers, and (b) by interviewing mothers. Mothers were interviewed after delivery to obtain information about antenatal care and 2 years later to ascertain the childcare provided within this period. Adequate care was defined by the local health authorities based on the frequency and number of appointments. Multifactorial analysis (logistic regression) was used to study factors associated with inadequate childcare.

**Results:** This sample comprises a high percentage of mothers with low educational levels (73.9% ≤10 years of education). Almost all children (99.8%) contacted the health centres, and 97.3% did it with the recommended frequency. The immunisation coverage according to Portuguese schedule was as high as 96.6% at 24 months. Nevertheless, an adequate surveillance in childcare was only reached by 78.9% of the children. The results suggest that inadequate surveillance is associated with maternal and health service characteristics. Women who had inadequate antenatal care also provided their children with less adequate care (adjusted odds ratio (OR)=2.0; 95% confidence interval (CI) 1.20 to 3.34); multiparous women were identified as having a higher risk of providing inadequate care to their children (parity ≥3 compared with parity 1: adjusted OR 5.06; 95% CI 2.49 to 10.31); and the children were more likely to have inadequate care when the health professional did not book the next appointment (adjusted OR 2.41; 95% CI 1.16 to 5.03).

**Conclusions:** Although it is likely that the most significant contributions in reducing health inequalities will be made by improving educational conditions, health services should develop interventions such as improving health education during the antenatal period, with special emphasis on the low educational level group, and organising an appropriate booking system for the next appointment to overcome access barriers and deliver better childcare.

### 005 INCREASING SOCIOECONOMIC INEQUALITIES IN MORTALITY, ROME 1990–2000

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**Introduction:** Population groups with a lower socioeconomic status (SES) have a greater risk of disease and mortality.

**Objective:** To analyse time trends of SES differentials of mortality in Rome from 1990 to 2000.

**Methods:** Rome has a population of approximately 2 800 000 (1991 census). During the study period 274 537 deaths occurred among residents. Age standardised mortality rates (per 100 000) were compared between four SES categories (SES I (very well off) to SES IV (very underprivileged)). Rate ratios (RRs; IV versus I) and 95% confidence interval (CI) were computed. To analyse temporal trends we used a linear regression model considering a weighted log transformation of RRs as the dependent variable, and the year of death as the independent variable. Regression weights were calculated as the inverse values of each RR standard error. We used two different models for males and females and tested the possible role of age as an effect modifier (age groups 0–24, 25–44, 45–64, 65+ years).

**Results:** The inverse association between SES and mortality was confirmed: in each period, for both males and females, a strong positive association between total mortality and low SES existed (table 1).

**Table 1** Comparison of mortality rates for different socioeconomic groups according to sex

| Year | Males  |      |              | Females |      |              |
|------|--------|------|--------------|---------|------|--------------|
|      | Rate I | RR   | 95% CI       | Rate I  | RR   | 95% CI       |
| 1990 | 800.2  | 1.10 | 1.06 to 1.14 | 477.9   | 1.00 | 0.93 to 1.07 |
| 1991 | 802.7  | 1.16 | 1.12 to 1.21 | 490.6   | 1.06 | 0.98 to 1.13 |
| 1992 | 756.1  | 1.12 | 1.08 to 1.17 | 478.4   | 1.04 | 0.97 to 1.12 |
| 1993 | 747.0  | 1.21 | 1.16 to 1.25 | 487.1   | 1.02 | 0.95 to 1.09 |
| 1994 | 732.9  | 1.22 | 1.18 to 1.27 | 476.8   | 1.08 | 1.00 to 1.15 |
| 1995 | 700.1  | 1.28 | 1.23 to 1.33 | 439.8   | 1.18 | 1.10 to 1.27 |
| 1996 | 656.5  | 1.29 | 1.24 to 1.34 | 433.2   | 1.12 | 1.05 to 1.21 |
| 1997 | 638.9  | 1.37 | 1.32 to 1.43 | 445.7   | 1.25 | 1.16 to 1.34 |
| 1998 | 645.6  | 1.28 | 1.23 to 1.33 | 421.4   | 1.24 | 1.15 to 1.33 |
| 1999 | 671.9  | 1.24 | 1.19 to 1.29 | 436.2   | 1.18 | 1.10 to 1.27 |
| 2000 | 597.5  | 1.41 | 1.35 to 1.46 | 410.5   | 1.21 | 1.12 to 1.30 |

The weighted relationship between the log transformed RRs and time fitted a linear regression equation. For males, no effect modification by age was observed; the RR was 1.10 in 1990 and increased each year by 2.1% (95% CI 1.4 to 2.7). For females, we found an interaction between year of death and age groups. No significant trend of RRs was observed in age groups 0–24 and 25–44 years. The RRs of death between SES IV and SES I increased from 0.9 to 1.2 in 2000 in the age group 45–64 years, and from 1.0 to 1.2 in the age group 65+ years. The annual increase was 2.8% (95% CI 0.8 to 4.5) and 2.3% (95% CI 1.4 to 3.1), respectively.

**Conclusion:** Despite the Italian NHS offering universal coverage, the disparity in mortality rates between people of different SES in Rome are increasing.

1. **\*Micheleozzi P, et al.** Inequality in health: socio-economic differentials in mortality in Rome, 1990–95. *J Epidemiol Community Health* 1999;53:687–693.

### 006 QUALITY OF LIFE OF PATIENTS WITH ORAL CANCER

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**Introduction:** Quality of life is a multidimensional construct increasingly incorporated into the evaluation of health status and treatment of patients with different diseases. Oral cancer is a particularly traumatic type of cancer, which involves facial disfigurement and functional disabilities, frequently associated with negative influences on patient isolation and quality of life.

**Objective:** The current study assessed the self reported quality of life of patients with oral cancer, with the objective of identifying and classifying their main complaints according with several characteristics (age, sex, socioeconomic status, TNM (tumour, nodes, metastases) classification and anatomical site).

**Methods:** We interviewed patients with oral squamous cell carcinoma at a major Brazilian hospital (Hospital das Clínicas, School of Medicine, University of São Paulo) using the UW-QOL-R (Revised University of Washington Quality of Life Questionnaire, version 3), which addresses the following dimensions: pain, appearance, activity, recreation, swallowing, chewing, speech, shoulder, taste, and saliva. The questionnaire was given to 111 patients at baseline; the follow up of 62 patients 1 year later accounted for the longitudinal assessment of data.

**Results:** Patients with T3 and T4 tumours (compared with T1 and T2), patients with cancer in posterior anatomical sites (compared with the anterior portion of the mouth), and patients who underwent recent surgery (compared with those in pre-treatment stages and after 6 or more months of surgery) presented a significantly poorer profile (p<0.05) for most items of the questionnaire. Difficulties in chewing (49%) and swallowing (30%) were the most prevalent complaints during the seven days preceding the interview. At follow up, 20 (18%) patients had already died, and the hospital lost contact with 29 (26%) of them. The remaining patients reported a significant reduction in pain and an improved ability in tasting foods. However, difficulties in chewing (52%) and swallowing (27%) remained the most prevalent complaints.

**Conclusion:** The persistence of a high prevalence of complaints related to chewing and swallowing reinforces the importance of a continuous monitoring of dental status and treatment needs for patients with oral cancer. An effective participation of the dentist in the multiprofessional

team assisting these patients can contribute to reduce the harmful consequences of disease and surgery, and improve their overall quality of life during different stages of their treatment. The use of the UW-QOL-R questionnaire allowed identification of the most frequent complaints of patients with oral cancer. This methodology also allowed the identification of factors associated with a poorer profile of quality of life, and configures an important tool for the decision making process as regards the selection and monitoring of treatment and rehabilitation resources.

**007 THE SOBRAL SURVEY ON HEALTH, EDUCATION, AND QUALITY OF LIFE OF CHILDREN AGED 5 TO 9 YEARS IN URBAN SETTINGS OF SOBRAL, BRAZIL 1999–2000: LOCAL HEALTH POLICY BASED ON EPIDEMIOLOGICAL EVIDENCE**

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**Introduction:** Children between 5 and 9 years old are seen as a population of low risk for mortality and morbidity, therefore little attention is given to the health needs of this group, especially in countries of scarce resources. This situation may be improved when health policies are planned based on epidemiological studies raised by the policy makers' needs towards new healthcare models.

**Objective:** To identify healthcare needs from the epidemiological profile of children in a low risk age group.

**Method:** A cross sectional study was designed to interview mothers, preferably, or another adult at home. A stratified probability sample, by year of birth (from 1990 to 1994), allowed the selection of 3444 children aged 5–9 years. The reference population was a dataset of all families with children in this age group, living in the urban area of the city and registered in the city's family health programme. The community health workers filled out official forms. Only one child per home was allowed to enter the study randomly. From the total sample, a sub-sample of 2795 children was randomly selected for clinical examination and 375 for laboratory examinations. Data was collected from November 1999 to October 2000 by trained interviewers recruited among university students from college courses not related to the healthcare professions. A semi-structured questionnaire was pre-tested in the field, and data entry was performed using Epi-Info software (version 6.04). Epidemiological indicators were: social and demographic characteristics, schooling, nutrition, food consumption, child labour, health services utilisation, and referred morbidity.

**Results:** Contrasts were found comparing the availability of healthcare facilities, schools, and social urban equipment combined with high prevalence of referred morbidity in the previous 15 days (43.9%) and school dropout rates (8.2%). This disparity increased among low income families and people of colour. The population of children aged 5–9 years in these settings presents a high morbidity prevalence rate, not related to school dropout rates, despite the availability of health services and school facilities.

**Conclusion:** Local health policy makers should take into account children in this age group. Family health programmes could play an important role to integrate other social sectors to face children's needs. The community health workers could be the main agents in this process.

**008 EVALUATION MATRIX MODEL IN THE SANTOS MENTAL HEALTH SERVICES**

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**Objective:** To apply an evaluation matrix model to the Santos mental health services.

**Method:** Five studies were designed aiming to gather information for the matrix: (a) psychiatric reform unit history, (c) service network mapping, (c) service classification, (d) epidemiological profile, and (e) quality of life for the patients. The matrix was formed by two axes, geographical and temporal, each one with three levels: (1) country, (2) local, (3) patient, and (A) input, (B) process, (C) results.

**Results:** For 13 years, the Santos psychiatric reform unit has been considered as an example for the country. A critical history review showed an unstable establishment marked by the dismantling of the psychiatric hospital. Alongside this revolution, a services network was built in such a way that nowadays it presents promising results, such as the wide coverage and low inpatient tax. At present, there are serious difficulties, because it is not an important political concern, which has resulted in an insufficient number of professionals for the large demand, and little specialised assistance.

**Conclusion:** The matrix model is useful in understanding the holistic assistance comprehension, not relying exclusively on patients' outcome information, but recognising and including a wider perspective, such as the historical and the political background.

**009 INSUFFICIENT BIRTH WEIGHT: STUDY OF ASSOCIATED FACTORS IN TWO COHORTS OF NEWBORN INFANTS FROM RIBEIRÃO PRETO, BRAZIL, SEPARATED BY A 15-YEAR INTERVAL**

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**Introduction:** In many developed countries, insufficient birth weight (IBW; 2500–2999 g) has been decreasing, but in developing countries these rates continue to be high, and very few studies have assessed the factors associated with IBW infants and their long term consequences.

**Objective:** To investigate the possible factors associated with IBW in two cohorts of singleton newborn infants from Ribeirão Preto, Brazil, the first study in 1978/79 and the second in 1994, and to identify the causes of the increase in IBW that occurred during this period.

**Methods:** A total of 6223 deliveries were studied in 1978/79 and 2552 in 1994, with data collected at all maternity hospitals in Ribeirão Preto, after exclusion of low birth weight infants (<2500 g). The variables were: maternal age, mother working outside the home, previous abortions, previous stillbirths, number of children, maternal smoking, maternal educational level, occupational group, marital status, number of prenatal visits, type of delivery, category of admission to the hospital, family income, type of hospital, gestational age, and newborn sex. The association between IBW and the above independent variables was first analysed by calculation of the crude odds ratio (OR) and of the 95% confidence interval (95% CI). Multivariate analysis was then performed using the multiple logistic regression models to test the confounding effect of the independent variables. The level of significance was set at 0.05.

**Results:** IBW increased from 22.4% in 1978/79 to 28.7% in 1994. After adjustment, seven variables were implicated in IBW in 1978/79: maternal age of less than 20 years ( $p=0.030$ ), fewer than four prenatal visits ( $p=0.003$ ), family income <5 times the minimum wage ( $p=0.030$ ), vaginal delivery ( $p<0.001$ ), newborn female sex ( $p<0.001$ ), maternal smoking ( $p<0.001$ ) and preterm delivery ( $p<0.001$ ). In 1994 4 variables were implicated: mother working outside the home ( $p=0.020$ ), newborn female sex ( $p<0.001$ ), smoking habit ( $p<0.001$ ) and preterm delivery ( $p<0.001$ ).

**Conclusions:** The socioeconomic variables that acted in 1978/79 disappeared in 1994, except for newborn sex, smoking habit, and prematurity, which were the main causes of IBW during both periods studied. As maternal smoking was reduced between the two studies and since there was no change in the proportion of female newborns, the most plausible explanation for the increase in IBW seems to be the large increase in premature deliveries between the two studies, from 7.6% to 13.6%. This increase was largely determined by the increase in delivery by caesarean section (from 30.3% to 51.1%), mostly due to non-medical reasons, which provoked a reduction in mean birth weight between the two studies (from 3293 to 3185 g) and a leftward shift for the birth weight curve for the 1994 cohort compared with the 1978/79 curve, with an increase in both low and insufficient birth weights.

**010 EFFECTIVENESS OF RESPITE CARE TO DECREASE THE PSYCHOLOGICAL DISTRESS OF DEMENTIA CAREGIVERS**

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**Objective:** To combine evidence from experimental and/or observational studies on the effectiveness of respite care on the psychological distress of dementia caregivers.

**Methods:** Using appropriate terms, we searched PubMed and The Cochrane Library. Secondary citations from retrieved papers and former reviews on caregiver burden were also searched to trace relevant studies. Effectiveness was assessed by reported changes on scores from validated psychiatric scales (GHQ-30, CES-D, MADRS) in the caregivers whose relatives used respite care services compared with controls. A random effect hierarchical Bayesian model with non-informative priors was used to combine the individual standardised mean differences (SMD). WinBUGS estimates were extracted after 5000 iterations once convergence was achieved (burn in of 1000 iterations).

**Results:** Seventeen independent papers (over a total of 166) were initially selected. Four studies (only one experimental design) were finally considered appropriate for the meta-analysis. The random effect combined estimate supports a small to moderate effect for respite care programmes (SMD = -0.28; 95% confidence interval = -0.58 to 0.01).

**Conclusions:** High levels of psychological distress in caregivers have been associated with the decision to institutionalise their relatives with dementia. Current evidence, even if scant, favours the effectiveness of respite care programmes to decrease the psychological distress of dementia caregivers, hence the usefulness of developing these type of community services for people with dementia.

### 011 EVOLUTION OF WINTER MORTALITY 1969–2001 IN VIANA DO CASTELO, PORTUGAL

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**Introduction:** Recent studies show that Portugal is the country in Europe where seasonal variation of mortality is greatest. A study made in Viana do Castelo district (250 000 inhabitants) showed that 73.3% of annual variation of mortality in the years 1969–1985 was associated with mean monthly temperature. There was a clear U shaped curve due to the excess cold related mortality in the 65 years and older group.

**Objective:** This study reports on the evolution of seasonal mortality variation since then, for the period 1986–2001, by sex, age, and cause.

**Methods:** Monthly indices of mortality were calculated after adjustment for 30 days, for each year of 1986–2001. Coefficients of variation of monthly adjusted mortality were calculated for the period. Excess winter mortality was calculated using deaths from December to March minus the average of deaths in the preceding August to November and the following April to July. Results from the previous study referred are used.

**Results:** Moving average of annual coefficient of variation of mortality showed a negligible decrease from 1969 to 2001. Comparing the periods 1969–1985 and 1986–2001, the U shaped pattern of annual variation of mortality remained unchanged, with excess deaths from December to March. No pattern of variation was found for the under 65 years of age. The U shaped line became deeper as the age group went up: 65–74; 75–84; 85+ years. For these age groups, the variation was larger for females than for males. For the period 1986–2001 there was an excess mortality of 3.87% (mean seven deaths per year) for the under 65 years group and of 39.4% for the 65 years and over group (mean 273 deaths per year). For the 65 years and over group there was no U shaped line of variation for neoplasm; instead, it was clearly U shaped for mortality from cerebrovascular disease, ischaemic heart disease, and respiratory disease.

**Conclusions:** The evolution of cold related mortality from 1969 to 2001 in the district of Viana do Castelo shows a negligible decrease. The 65 years and over age group remain at increased risk of dying from cerebrovascular, ischaemic heart, and respiratory causes during winter. All the epidemiological knowledge that has been acquired more recently on this issue could help to reduce the winter excess of deaths in this district.

### 012 PREVALENCE OF PHYSICAL INACTIVITY AND ASSOCIATED VARIABLES: A POPULATION BASED STUDY IN BRAZILIAN ADULTS

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**Introduction:** Regular practice of physical activity (PA) has been associated with a lower risk of obesity and chronic degenerative diseases, and with longevity. Consequently, measuring the PA level becomes very important from a public health point of view.

**Objective:** To estimate the prevalence of physical inactivity and the associated variables in the adult population resident in a small city in southern Brazil.

**Methods:** A cross sectional study was carried out in Joaçaba, southern Brazil, in 2003. A representative random sample of 579 adults between 20 and 59 years old was interviewed at home, weighed, and measured with calibrated scales. The International Physical Activity Questionnaire (IPAQ) was developed to assess PA, supported by World Health Organization (WHO) and Centers for Disease Control (CDC), and is the tool of choice for interviews conducted in person in developing countries. To assess physical inactivity level, the official Portuguese short version of the IPAQ was applied, recalling information on the last 7 days. The physical activity score was obtained as the sum of minutes spent in fast and moderate walking, moderate activity, and vigorous activity, this last one multiplied by 2. Those people who presented a score below 150 minutes/week according to CDC recommendation were considered as physically inactive. The main explanatory variables investigated were family income, schooling, gender, age, body mass index, self-perception of quality of life, alcohol and smoking habits, and partner status (living with or without a partner). These variables were collected through a pre-tested questionnaire. Simple and multiple logistic regression analyses were performed for the physical inactivity (Yes/No), the outcome investigated.

**Results:** Five hundred and seventy two people answered the questionnaires and were weighed and measured, with a non-response rate of 0.4%. The distribution of physical activity showed positively skewed scores. The prevalence of physical inactivity was 29.6% (95% confidence interval = 25.9 to 33.3%) almost identical in both males and females. Scores equal to 0 minutes of activity per week were observed in 15.4% of men and 10.5% of women ( $p=0.102$ ). The maximum number of minutes spent was 5760 and 6900 for men and women, respectively. After multivariate analyses, it was observed that physical inactivity was associated with those people whose schooling was between 4 and 10 years and with smokers. Furthermore, a positive association with age and with overweight people was also identified.

**Conclusions:** The prevalence of physical inactivity found in this study was lower than most studies reported in the literature and also when compared with the unique, population based study previously developed in Brazil. Further research is necessary to clarify the reasons for this pattern. In spite of this, public health policies might be developed in order to control the variables associated with physical inactivity.

### 013 RISK FACTORS PREVALENCE OF OVERWEIGHT AND WEIGHT LOSS BEHAVIOURS IN TEENAGERS

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**Introduction:** The prevalence of overweight has increased over the last decades and it is now one of the most important health problems during adolescence, both in developed and in developing countries. On the other hand, youngsters show a growing tendency to worry about their weight, and, consequently put weight controlling behaviours into practice, some of which may endanger their health.

**Objectives:** To assess the prevalence of overweight in teenagers; to study the gender, age, and family economic level as risk factors; and to identify weight loss directed behaviours.

**Method:** A descriptive study of the prevalence of overweight on a population of teenagers, aged 10 to 18 years from the municipality of Braga, Northern Portugal, in 2003, was carried out. To carry out the sample, the total number of basic and secondary schools was classified in two strata; one made up by the schools within the city and the other by the schools of the municipality. Subsequently, a conglomerate two stage sample from each stratum was selected, the schools being the units of the first stage and the classes the units of the second stage. A questionnaire was used to obtain information on all variables of interest and the weight and height of the subjects were measured. The criteria of the Centers for Disease Control and Prevention were applied in the definition of overweight, the risk of overweight, and for regular weight and low weight. The gender, age, and economic level effects on overweight was studied through logistic regression for independent data, with the odds ratio (OR) and the corresponding confidence interval (95% CI) being determined.

**Results:** There were 452 students who participated in this study (54.4% boys and 45.6% girls). The prevalence of overweight was 22.8% (95% CI 18.9% to 26.7%). Gender was not a risk factor for overweight (OR 0.88; 95% CI = 0.56 to 1.39). Age reduced the risk of overweight by 0.8 times (95% CI 0.77 to 0.95). The economic level was not a risk factor for any of the five categories that were studied (OR 0.30; 95% CI 0.04 to 2.05; OR 0.29; 95% CI 0.04 to 2.02; OR 0.45; 95% CI 0.07 to 2.98;

and OR 0.38; 95% CI 0.05 to 2.63 respectively). The proportion of students wanting to lose weight was 40.5%. The proportion of students that had tried to lose weight was 26.8% and of the students that had been on diets was 16.6%, with 6.2% being on a diet at the time this study was made. The proportion of students that practised physical exercise to lose weight was 61.5%. The proportion of students that put purgative behaviours into practice and took pills was 5.8%.

**Conclusions:** The high prevalence of overweight and the practice of unhealthy behaviours to lose weight allows a conclusion on the importance of intervention programmes aimed at the promotion of health and the prevention of overweight and unhealthy behaviours of weight control.

#### 014 TIME TRENDS OF RAILWAY SUICIDES IN GERMANY FROM 1991 UNTIL 2000

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**Introduction:** Railway suicides are a suicidal behaviour that strongly impacts on the psychological and socioeconomic aspects of the railway company, its employees, and possible eyewitnesses. However, only a few studies relating railway suicides with time trends on a population derived basis have been carried out so far.

**Objective:** To assess the incidence of railway suicides compared with the total burden of suicides in Germany and its time trend over a 10 year observation period on a population based dataset.

**Methods:** From 1991 to 2000, a total of 8653 fatal railway suicides were recorded by the national central registry of all passenger accidents on the German railway network. The national suicide rates were taken from the German Report on Health Statistics, which are currently available until the year 2000. To assess time trends, the average annual percentage change (AAPC) of the number of suicides was estimated using Poisson regression. In case of overdispersion of the Poisson model, the dispersion parameter was estimated by the ratio of the deviance to its associated degrees of freedom. Adjustments were made for two age groups (<65 years and >65 years) and measures of availability of the railway system.

**Results:** Railway suicides accounted for 7.0% (annual range 5.0 to 7.9%) of all suicides in Germany. For all suicides, the same time trend direction with a stronger decline in the number of suicides was observed for older subjects. In contrast, for the number of railway suicides, a "qualitative" interaction with age group was observed: for subjects aged ≤65 years, an AAPC of 1.8% (95% CI 0.1 to 3.4) indicated an increasing time trend whereas fatal incidences for subjects aged >65 years exhibited a strong decrease (AAPC of -6.2% (95% CI -10.9 to -1.3). For the same age group, the AAPC was 3.2 (95% CI 1.7 to 4.7) adjusted for the track length. No significant time trend was observed by the AAPC related to passenger volume and mileage covered by all trains.

**Conclusions:** The present study demonstrates different time trends for railway suicides compared with all suicides. It underlines the urgent need for amplified research efforts in the particular field of railway suicides. Further examinations are recommended in particular concerning possible reasons for this method of suicide.

#### 015 ASSOCIATIONS OF CARDIOVASCULAR RISK FACTORS WITH SOLUBLE ADHESION MOLECULES AND CD141

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**Introduction:** Low grade systemic inflammation and endothelial dysfunction are suggested to be involved in the pathogenesis of cardiovascular diseases and diabetes mellitus. The causes of endothelial dysfunction are not fully understood so far.

**Objective:** To investigate associations of cardiovascular risk factors with soluble adhesion molecules (E-selectin, sICAM-1) and CD141 as markers of endothelial dysfunction and to assess possible gender differences in these associations.

**Methods:** The study population consists of a sub cohort of 1,237 subjects aged 35–74 years randomly drawn from three cross sectional population based MONICA/KORA Augsburg surveys conducted between 1984 and 1995. Markers of endothelial dysfunction were natural log-transformed. Multivariable linear regression analysis with stepwise variable selection was used to investigate the association

between cardiovascular risk factors (smoking status, alcohol consumption, physical activity, educational level, adiposities, actual hypertension, diabetes, total cholesterol) and E-selectin, sICAM-1 and CD141 in men and women. Age and survey were forced to stay in each model.

**Results:** All three markers were strongly correlated to each other (Pearsons correlation coefficients for log transformed variables  $\rho > 0.174$ ,  $p$  values  $< 0.001$ ). Men had significantly higher (geometric) mean values of E-selectin (53.9 ng/ml), sICAM-1 (826.6 ng/ml) and CD141 (4.6 ng/ml) than women (45.3 ng/ml, 770.1 ng/ml and 4.1 ng/ml) ( $p < 0.001$ ). In multivariable regression analysis, smoking status and adiposities were significantly associated with elevated levels of E-selectin and sICAM-1 in men and women. Alcohol consumption was significantly associated with all three markers of endothelial dysfunction in men and only with CD141 in women. Moreover, current use of hormone replacement therapy had no impact on markers on endothelial dysfunction. In contrast, a significant association of current use of oral contraceptive with lower values of (natural log transformed) E-selectin was observed in a linear regression model adjusted for age, survey, and cardiovascular risk factors.

**Conclusions:** Only a few cardiovascular risk factors are associated with markers of endothelial dysfunction in multivariable adjusted regression analysis. Smoking status and adiposities have the strongest impact on markers of endothelial dysfunction in men and women.

#### 016 RESULTS OF A CASE – CONTROL STUDY ON POTENTIAL RISK FACTORS FOR THE DEVELOPMENT OF STROKE AMONG FACTORS OF NON-COMPLIANCE WITH THE THERAPEUTIC REGIMEN IN THE GAZA STRIP

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**Introduction:** Hypertensive patients are more likely to have a stroke than patients with normal blood pressure. Besides hypertension, other factors such as smoking, overweight, and poor diet (high in fat and salt), may increase the risk of stroke. Antihypertensive medication, weight control, restriction of sodium, physical activity, regular medical follow up and psychological factors such as emotional disturbance each contribute to a certain extent to a normal blood pressure in hypertensive patients.

**Objectives:** To study potential risk factors among factors of non-compliance with the therapeutic regimen for the development of stroke.

**Methods:** A paired case – control study among 112 patients, who had been hospitalised for acute stroke with history of hypertension, and 224 controls with history of hypertension matched by age, sex, start of therapeutic regimen, and enrolment location, was carried out. A structured interview on compliance with medication, diet, weight reduction, exercise, follow up healthcare, and smoking was used for data collection. Conditional logistic regression models were used for data analysis.

**Results:** Significant risk factors for stroke were excessive usage of salt (OR 4.512), excessive usage of fat (OR 4.671), high level of stress (OR 2.779) and medication not taken as prescribed (OR 6.073). Regular physical exercise (OR 0.269) was found to be a protective factor. Smoking was a significant risk factor only if interaction terms (psychological stress) were considered. Further potential interaction terms were analysed.

**Conclusions:** The results indicate that non-compliance with the therapeutic regimen increases the risk for the development of stroke in Gaza. Further studies are needed to explain knowledge and misconceptions of patients with hypertension in Gaza, which might lead to a better understanding of non-compliance with the therapeutic regimen.

#### 017 ESTIMATION OF EFFECTIVENESS OF GENERAL VERSUS SELECTIVE SCREENING OF SYPHILIS AMONG DRUG USERS IN INPATIENT SETTINGS

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**Introduction:** The number of syphilis cases has decreased in general during the last decades in Germany, and therefore syphilis screening is no longer a routine procedure at admission to psychiatric hospitals. Opiate users are a high risk group for syphilis infection. Owing to a lack

of epidemiological data, there are no recommendations as to whether syphilis screening should be routinely performed in opiate users admitted to medical treatment, or only selectively in patients with an increased risk for syphilis.

**Methods:** Using a standardised questionnaire regarding patterns of drug use and sexual behaviour, 1186 patients admitted to eight detoxification units in North Rhine-Westphalia, Germany, in 2000–01 were interviewed by the physicians. A TPHA-test was carried out in each patient and in the case of a reactive test a FTA-ABS IgM for syphilis was performed.

**Results:** TPHA positive tests were found in 39 (3.3%) of 1186 drug users (97% of whom were opiate users) and seven (0.6%) were IgM positive. Female patients were 4.45 (95% confidence interval (CI) 2.40 to 8.25) times more likely to have a positive TPHA test than males. Female patients who regularly had sex for drugs or money were 14.0 (95% CI 7.9 to 25.0) more likely to have reactive TPHA test than remaining patients. Immigration status and patterns of drug use were not associated with TPHA reactivity.

**Conclusions:** In view of the low overall prevalence of syphilis even in the sample of drug users, and the strong association between positive syphilis serology and female gender and regular sex for drugs or money, a selective screening strategy restricted to this group should be advocated.

### 018 EFFECTIVENESS OF ACUPUNCTURE TREATMENT FOR CHRONIC NECK PAIN: THE ACUPUNCTURE IN ROUTINE CARE (ARC) STUDY

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**Introduction:** Acupuncture is widely used by patients suffering from chronic neck pain.

**Objective:** To evaluate the effectiveness of treatment with versus without acupuncture in patients with chronic neck pain in routine care.

**Methods:** Patients ( $\geq 18$  years) with chronic neck pain were randomised either to an acupuncture group (ACU) or a control group (CON). Patients who disagreed with randomisation were monitored in a third group, which also received acupuncture (NR-ACU). Over a period of 3 months, the ACU and NR-ACU groups received up to 15 acupuncture treatments, whereas the CON received no acupuncture. For all treatment groups, usage of routine medical care was permitted. Patients received standardised questionnaires including socio-demographic data, neck pain and disability (Neck Pain and Disability Scale; NPDS) and health related quality of life (SF-36) at baseline and 3 months.

**Results:** Of a total of 13 846 patients included in the study 3451 (69% female, 49.2 (12.7) years; 31% male, 53.5 (12.9) years) agreed to be randomised. After 3 months of treatment we found a higher improvement in neck pain in the ACU compared with the CON (NPDS baseline to 3 months: ACU 56.4 (15.2) to 39.6 (17.5); CON 54.5 (15.8) to 51.2 (17.7),  $p < 0.001$ ). After 3 months, quality of life on the mental and the physical component scale differed significantly between the treatment groups ( $p < 0.001$ ), again in favour of ACU. There were no significant differences between ACU and NR-ACU for the NPDS and quality of life after 3 months.

**Conclusion:** In patients with chronic neck pain acupuncture in addition to routine care showed a significant and relevant improvement of pain, disability, and quality of life compared with treatment without acupuncture.

### 019 SELF REPORTED TRAFFIC DENSITY AND ATOPIC DISEASE IN CHILDREN

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**Introduction:** Positive associations between traffic exposure and atopic respiratory disorders in children have been described in several studies.

**Methods:** We analysed data related to self reported truck traffic density and several symptoms and diagnoses of asthma and hay fever (12 month wheezing and rhinitis symptoms, diagnoses of asthma and hay fever) from the ISAAC Phase III survey in Muenster, Germany, using core written and video questionnaires. Data were collected from representative school-based samples ( $n = 7345$ ) of 6–7 and 13–14 year olds.

**Results:** In 13–14 year olds categorised according to exposure levels into rare, frequent, and constant, with the "never" category used as reference, the sex adjusted prevalence ratios were 1.29 (95% CI 1.08 to 1.53), 1.58 (1.29 to 1.94), and 1.57 (1.18 to 2.10) for wheeze in the previous 12 months, and 1.20 (1.06 to 1.34), 1.35 (1.17 to 1.55), and 1.69 (1.42 to 2.0) for rhinitis symptoms in the previous 12 months. Prevalence ratios in 6–7 year olds and results for a diagnosis of asthma were less consistent, while no positive association was detected between hay fever and truck traffic in both age groups. When analyses were based on a more general traffic indicator (self reported traffic noise), no consistent associations were observed.

**Conclusions:** Our data provide support for the hypothesis that residential exposure to truck traffic may adversely affect the health of children.

### 020 DIFFICULTIES IN THE QUANTIFICATION OF RF EXPOSURE FROM APPLIANCES IN ANALYTICAL EPIDEMIOLOGICAL STUDIES

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**Introduction:** Although evidence is still limited, possible adverse health effects after exposure to radiofrequency (RF) emitting appliances have been a major concern in experimental and epidemiological research.

**Objective:** To assess the quality of exposure estimates based on interviews in a large epidemiological case–control study.

**Methods:** The Northern Germany Leukaemia and Lymphoma Study, conducted 1997–2002, recorded lifetime use of a pre-selected array of RF emitting appliances (cellular and cordless phones, baby monitors, and TV headphones) in standardised, face to face computer assisted interviews. Exposure assessment comprised three levels of precision: ever use, gross/net appliance years, and lifelong cumulative exposure hours.

**Results:** Weighted kappa coefficients for gross versus net appliance years in men ranged between 0.59 (95% confidence limits 0.46 to 0.71) for baby monitors and 0.98 (0.97 to 0.99) for cordless phones. In women, kappa coefficients were 0.68 (0.56 to 0.79) and 0.97 (0.94 to 0.98), respectively. Weighted kappa values were considerably lower when net appliance years and lifelong cumulative exposure hours were compared. For baby monitors the two exposure measures were almost uncorrelated for both sexes.

**Conclusions:** We demonstrated in our data that interview information on the use of RF emitting appliances can result in misclassification when measured with different levels of precision, which may eventually lead to biased risk estimates.

### 021 MULTI-SOURCES INFORMATION SYSTEM AND EPIDEMIOLOGICAL FOLLOW UP OF CHRONIC DISEASE

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**Introduction:** The absence of systematic and continuous data collection about the nature and the evolution of the demand of care penalises the appropriateness of the supply of care for endstage renal diseases. In order to respond to the information needs, an information system based on the Internet, integrating the data of renal dialysis and transplantation was recommended.

**Methods:** The multi-source information system (MSIS) was designed following an "n tiers" architecture model. Lightweight universal clients in the client tier interact through a web browser with a dynamic web server in the middle tier. The dynamic web server in turn interacts with the databases located in the information system tier. The patient data are first collected in the production database, then consolidated, exported, and historicised in a data warehouse. MSIS deployment in the regions fits within a framework agreement, which brings together decision makers including representatives of the health ministry, social security institution, health professionals, epidemiologists, and patients. A clinical research assistant ensures the control of exhaustiveness and quality of the patient data. The position of the clinical research assistant is complementarily financed by the national project network and by the region.

**Results:** This MSIS is currently in production in three regions: Limousin, Languedoc-Roussillon and Champagne-Ardenne. The production database includes more than 3000 patient files. Deployment in new regions (Provence-Alpes-Cote-d'Azur, Centre) is underway starting in January 2004.

**Discussion:** The use of the MSIS in the regions helped in testing its ergonomics, portability, ubiquity, and acceptability among users as well as the respect of confidentiality (authorisation of the National Commission of Informatics and Freedom). The system usability in providing pertinent descriptors for the care demand and supply, and for their adequacy was validated at the regional and the national level. In addition, the MSIS supports the analysis of the patient's trajectory through the healthcare procedures: dialysis and transplantation and provides the basis for a geographic information system.

**Conclusion:** An MSIS via Internet including a data warehouse is an adapted tool for describing the endstage renal diseased population at regional and national level. This model allows a better approach to developing knowledge about the care demand and the existing supply, and about methods to improve their adequacy.

## 022 NON-MELANOMA SKIN AND BLADDER CANCER INCIDENCE IN RELATION TO ARSENIC EXPOSURE: 20 YEARS OF OBSERVATION

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**Introduction:** The subject of our analysis was a database of 1503 non-melanoma skin cancer (NMSC) cases (756 in men and 747 in women) and 230 bladder cancer cases (187 in men and 43 in women) collected from 1977 to 1996 in a region polluted by emissions of a power plant arising from burning of coal with a high arsenic content, ranging between 900 and 1500 g per metric ton of dry coal.

**Exposure assessment:** Exposure assessment of the local population of the district was based on biological monitoring. Determination of arsenic was done in groups of 10 year old boys as samples of a non-occupationally exposed general population by analysing hair and urine samples at different localities situated up to the distances of 30 km from the local power plant. The district was split in two areas marked off by a 7.5 km circle around the power plant. The criterion of higher exposure was arsenic content exceeding hair concentrations of 3 µg/g of arsenic. In a 7.5 km radius of the exposed region live about two-tenths of the district population, which was considered as "exposed"; the rest of the district served as the control population.

**Methods:** Basic epidemiological data of the cancer cases were obtained by a questionnaire, which covered basics of personal, family, residential, and occupational history. Our study base represents 1328 men/year and 1334 women/year of a population of approximate size of 125 000 inhabitants.

**Results:** The age standardised incidence of non-melanoma skin cancer (each confirmed by histological examination) in non-occupational settings ranged from 45.9 to 93.9 in men and from 34.6 to 81.4 in women. Relevant data for bladder cancer (each confirmed by biopsy or autopsy histological examination) ranged from 10.2 to 21.1 in men and from 0.0 to 3.7 in women per 100 000.

**Conclusions:** Analysis of our data demonstrates a positive correlation between human cumulative exposure to arsenic and incidence of NMSC, which adds further confirmation to the long held clinical and epidemiological experiences with non-melanoma skin cancer and exposure to arsenic. Owing to the relatively small numbers, analysis of our database does not confirm the suspected relationship between exposure to arsenic and bladder cancer incidence.

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## 023 IS A COHORT STUDY ON WORKERS EXPOSED TO HIGH FREQUENCY RADIATION FEASIBLE?

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**Introduction:** There are numerous studies on the effects of electromagnetic fields on cancer mortality; however, specific studies focusing on high frequency (HF) radiation are rare and their results are inconsistent.

**Objective:** The aim of this German feasibility study was to find an occupational cohort to analyse health effects of HF radiation.

**Method:** In a first step, a literature review was performed. Nine existing cohort studies on high frequency exposure during work were found. They mainly examined cancer mortality. In the next step, contacts were made with government organisations, commissions, professional organisations, and companies to find possible cohorts for occupational HF radiation exposure. At the same time, criteria were developed for assessment of the exposure, building up of the cohort, and follow up.

**Results:** In total, 26 occupations were collected. Three were selected for evaluation according to the criteria catalogue compiled by our working group: engineers and technicians of medium wave and short wave transmitting plants, amateur radio operators, and workers on HF dielectric heat sealers. However, all three cohorts exhibit deficits in one or another criterion. The greatest number of disadvantages were found for the cohort of workers on HF dielectric heat sealers, although the exposure was the most distinct. The other two cohorts exhibited the same number of strengths and weaknesses. The strength of the amateur radio operators lies in the large number of subjects that can be approached in a uniform way. The high quality of the retrospective exposure estimation is the strength of the workers in the short and medium wave transmitters' cohort.

**Discussion:** Mortality studies should be performed in a historical approach as for example the amateur radio operator or engineers and technicians of medium wave and short wave transmitting plants. Cohort studies on morbidity, particular for Germany, are only practicable in a prospective follow up design, which might take a long time. Clinical parameters should also be investigated in a small sub-group. In all, the vast majority of occupational groups that we had considered from literature reviews had to be excluded from further consideration owing to small numbers of exposed subjects or exposure levels only marginally higher than for the general public.

## 024 HEALTH IMPACT ASSESSMENT (HIA) OF A MUNICIPAL WASTE INCINERATOR NEAR FLORENCE, ITALY

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**Introduction:** In 2002, the Province of Florence administration entrusted the Tuscany Health Agency with producing a health impact assessment (HIA) study of a municipal waste incinerator to be located in the west area of Florence.

**Objective:** To help decision makers to decide whether one out of the three proposed locations could be selected or none of them.

**Methods:** HIA was designed on the basis of British and Canadian experiences. Study area included a portion of three municipalities with approximately 100 000 residents. For the HIA screening stage, all ICD-9 groups and subgroups of causes of mortality and discharge hospital records at the municipality level over 1996-1999 were analysed. Atmospheric diffusion models were performed to obtain current values of existing pollution also to compare in terms of annual mean and peak concentrations the present situation with a perspective scenario including an incinerator. According to the estimated values of the highest pollutants fallout, a circular area of 2.5 km radius was selected. For the HIA appraisal stage, selected causes of mortality and hospital discharge records of populations residing within 2.5 km of the proposed sites were considered. Resident population and health events were georeferenced using a geographic information system. SMRs for mortality, morbidity, and mortality plus morbidity were calculated using the province of Florence as standard. The Cuzick-Edwards case-control method for clustering and Kulldorff's method for cluster identification were applied in specific situations.

**Results:** Screening stage: Although the general mortality and morbidity and the majority of causes in the three municipalities had similar results to the standard, some excesses were noteworthy, particularly for lung cancer, non-Hodgkin lymphomas, and selected congenital malformations. Appraisal stage: One of the three sites (site C) had a smaller population residing in the area (17 213) compared with site A (27 744) and B (30 913). Differences were more marked when considering a 1.5 km radius area (site A: 1067, site B: 3175, site C: 114). A statistically significant pulmonary disease (ICD9 518) excess in the southern part of the 1.5-2.0 km site A crown (SMR 168) emerged. In addition, excesses of pulmonary diseases in adults (SMR 122) and asthma (ICD9 493) in children aged 0-14 years (SMR 169) living near a heavy traffic road area were found. This area showed also a cluster of 34 events versus 16.3 expected for the same group of respiratory diseases.

**Conclusions:** Excesses for respiratory diseases in adults and children in the area around site C were detected. A few steps are still needed to conclude the HIA (risk assessment, recommendations, monitoring programme). However, first results lead the administration authority to an environmental requalification programme (traffic, cogenerating power plants, territory bioremediation) that is currently ongoing.

### 025 FAMILY DOCTORS' JOB SATISFACTION AND CONDITIONS OF PROFESSIONAL PRACTICE

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**Introduction:** Job satisfaction is acknowledged as being associated with satisfaction with life in general, with mental well-being and with professional performance. It is defined as a positive individual attitude towards the profession and the conditions of its execution.

**Objective:** In this study we report on a study of job satisfaction of family physicians in the Health Region of Lisbon and the Tagus Valley, with the following research objectives: determining the conditions in which professional practice takes place in the health centres; determining the level of family doctors' job satisfaction; determining the physicians' motivation for change (of profession, of career and from the health centre); and physicians' self-perceptions of health.

**Methods:** Twenty-four health centres were randomly selected. A validated job satisfaction questionnaire was personally presented to all the family doctors in each of the selected health centres. Conditions of professional practice were determined by a questionnaire applied to the Directors of the health centres and by direct observation, using a standard schedule, by a Technical Commission of the Medical Council and the Regional Health Authority. Data was analysed using SPSS, with recourse to the Pearson  $\chi^2$  test (with the Yates correction where appropriate), Fisher's exact test, the likelihood ratio test, or Student's *t* test where applicable. The study was carried out during 2002 and 2003.

**Results:** From 448 family doctors, 307 (69%) answered the questionnaire. The average level (on a Likert scale) of job satisfaction is neutral. Negative evaluations of job satisfaction are associated with pressure at work, poor work conditions at the health centre, and the type of incentives received. Positive evaluations of job satisfaction are associated with commitment to the work, feeling adequate to perform the expected tasks, and the relationships with colleagues and chiefs at work. These vary among health centres. Specific aspects of work conditions that affect family doctors' job satisfaction were, among others, the need to share a consultation room, the proportion of nurses to doctors, the proportion of administrative staff to doctors, the proportion of patients in the practice to doctors, and the number of overtime hours. Being dissatisfied is associated with a desire to change. Nine percent of the respondents would not have chosen a medical profession if they had to make that choice today, 34% would not choose being a family physician, and 25% would not choose the same health centre.

**Conclusions:** This study illustrates the importance of using the epidemiological method in health services research. It helps to identify factors that can be addressed by managers and policy makers in order to correct job dissatisfaction as a determinant of poor performance.

### 026 ACUTE EFFECTS OF AIR POLLUTION ON HUMAN HEALTH IN AN INDUSTRIALISED URBAN AREA IN ITALY

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**Introduction:** The town of Taranto in Southern Italy was included by the World Health Organization among areas at high risk of environmental crisis because of the presence of heavy industries (steel plant including coke oven shops, oil refinery and cement plant) and descriptive epidemiology showing excessive cancer deaths in the general population.

**Objective:** Within the projects developed by local regional government, an ecological study on short term effects of air pollution on general population was designed. Some of these data will be evaluated within the context of the national multicentre project MISA2, which includes about 20 Italian towns.

**Methods:** Daily measures of airborne pollutants, started in 1998, come from a network of six monitoring stations. Climate data are drawn from the local Meteorological Observatory. Health data are recruited from the mortality files of the local health unit and from the hospital discharge files of the regional epidemiological observatory. Only natural mortality (excluding traumatic deaths) has been examined among residents who have died in the city. Poisson regression, allowing for overdispersion and autocorrelation, was used to evaluate the percent change in daily deaths or hospital admissions associated with variations of air pollution measures, taking into account meteorological and other possible confounding variables.

**Results and Conclusions:** In November 2003, a first preliminary analysis for the period May 1998–December 2001 was conducted. The update through December 2002 has been recently completed. An overall evaluation of the air pollution in Taranto shows that data are in compliance with legal requirements, with the exception of total suspended particles (TSP), values of which exceed the guideline data (according to Law 203/1988). The situation is worse in the area closer to industrial area (mean (SD) (median) 81.2 (26.6) (78) mg/m<sup>3</sup>) compared with the city centre (average 55.3 (21.9) (51) mg/m<sup>3</sup>). Temporal trend of airborne pollutants shows little seasonality and no high background levels, but there are some elevated spike values, typical of areas with industrial emissions. Even mortality seems to be influenced by the presence of heavy industrial plants, cancer being the major cause of death in age classes 2–64 and 65–74 years, especially among males. Preliminary results on acute effects of air pollutants levels at selected time lags: lag<sub>2</sub>, lag<sub>0-3</sub>, and lag<sub>0-5</sub>, show an association between natural mortality and TSP at lag<sub>2</sub>, NO<sub>2</sub> at lag<sub>0-5</sub>, and CO at all lags, the latter suggesting a prominent role of vehicular traffic. More definitive results will be presented on the on going analyses to verify the hypothesis of association between air pollution and adverse acute effects on health in this area of southern Italy, characterised by a low socioeconomic level and by a developmental model based on a wide industrial area very close to the city.

### 027 PREVALENCE OF PACIFIER AND NURSING BOTTLE USE IN CHILDREN LESS THAN 1 YEAR OLD IN QUEIMADOS CITY

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**Introduction:** The use of pacifiers and nursing bottles by children can interfere with milk suction and is associated with high incidences of tooth decay. The Brazilian health ministry does not recommend these practices and has a specific legislation that obliges the pacifier and nursing bottle industries to print on those products a warning about the harm that can be inflicted.

**Objectives:** To verify the prevalence of pacifier and nursing bottle use in children less than 1 year old living at Queimados city/Rio de Janeiro (RJ) state.

**Methods:** The subjects were children less than 1 year old living in Queimados city, Rio de Janeiro, whose parents or relatives were questioned with a specific questionnaire. I think 'formulary' equates to 'questionnaire' developed by the Instituto de Saúde da SES/SP, about the use of pacifiers and nursing bottles in the previous 24 hours. The research was carried out on 14 June, 2003, together with the national vaccination campaign, and was promoted by Secretaria Estadual de Saúde do Rio de Janeiro and executed by the Área Técnica de Alimentação e Nutrição and Programa de Atenção Integral da Saúde da Mulher, Criança e Adolescentes of Queimados city, Rio de Janeiro.

**Results:** The study comprised 666 children less than 1 year old, of which 54.71% (n=354, missing cases=19) used pacifiers and 63.05% (n=418, missing cases=3) received any sort of foods by nursing bottle in the 24 hours preceding the research.

**Conclusion:** The high prevalence of pacifier and nursing bottle use by children less than 1 year old in Queimados city, Rio de Janeiro, reinforces the need for an effective public health policy that can promote information about risks of pacifier and nursing bottle use.

### 028 COFFEE AND GASTRIC CANCER: A COMMUNITY BASED CASE – CONTROL STUDY AND A META-ANALYSIS OF PUBLISHED DATA

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**Introduction:** Few studies have addressed the effect of coffee in gastric cancer, and these have yielded inconsistent results. with most individual



articles showing non-statistically significant associations. This led us to complement the results of an unpublished community based case-control study performed in Portugal with a meta-analysis of published data.

**Methods:** Three hundred and two histologically confirmed cases and 518 controls completed a face to face structured questionnaire, including sociodemographic, dietary, and lifestyle characteristics, including detailed coffee consumption habits. Age, sex, education, and smoking adjusted odds ratios (OR) and 95% confidence intervals (CI) were computed. Our results were combined with those from 15 studies identified in a PubMed® based search, providing quantitative estimates of the association between coffee and gastric cancer (relative risk or OR) and respective precision estimates, considering the highest versus the lowest exposure. We present the combined ORs, 95% CIs, and the results for heterogeneity tests, calculated through the fixed effects method with Stata® software.

**Results:** In our case-control study, and using never drinkers as reference, the OR for gastric cancer was 1.4 (95% CI 0.64 to 2.96) for ex-drinkers for more than 5 years, 3.1 (95% CI 1.40 to 6.63) for those stopping coffee consumption in the previous 5 years, and 1.4 (95% CI 0.88 to 2.08) for current drinkers. Although changes in coffee consumption can be expected in gastric cancer patients, no previously published case-control study considered the category of ex-drinkers. The overall combined OR estimate for the highest versus the lowest exposure was 1.03 (95% CI 0.92 to 1.16) for all 16 studies (heterogeneity test  $p=0.24$ ), 1.48 (95% CI 1.00 to 2.20) for three cohort studies, 0.99 (95% CI 0.82 to 1.20) for five population based case-control studies (heterogeneity test  $p=0.08$ ), 1.00 (95% CI 0.87 to 1.16) for seven hospital based case-control studies (heterogeneity test  $p=0.68$ ), 1.22 (95% CI 0.97 to 1.54) for four case-control studies considering coffee consumption in a period of 5 or more years prior to interview, and 0.94 (95% CI 0.82 to 1.07) for nine case-control studies assessing coffee consumption at diagnosis or in the previous 2 years (heterogeneity test  $p=0.34$ ).

**Conclusion:** When all studies were combined, no association was found between coffee and gastric cancer, but when considering studies with a stronger design to test the aetiological hypothesis (cohort or population based case-control studies addressing coffee consumption several years prior to interview) a small positive association was observed. As coffee drinking is very common, even small increases in risk might have a large population impact.

#### 029 SURVEY OF RISK FACTORS FOR CARDIOVASCULAR DISEASES AMONG PUBLIC SCHOOL TEENAGERS

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**Introduction:** Nowadays there is rising concern about cardiovascular disease (CVD). The cardiovascular diseases are the main cause of death around the world. In Brazil, because of the morbidity and mortality rates, cardiovascular disease is considered a public health problem. In many studies, the early lesions of arteriosclerosis can be seen even in youth.

**Objective:** The present study aims knowing the presence of cardiovascular disease risk factors in adolescents.

**Methods:** The study was conducted with 2047 students of both sexes, ages ranging from 14 years to 19 years and 11 months, all students at a technical school located in city of São Paulo. We applied a tested and validated form that measured the following cardiovascular disease risk factors: familiar history and dyslipidemia, diabetes mellitus, arterial hypertension, defined as systolic arterial pressure over than 133 mmHg and diastolic arterial pressure below 86 mmHg, obesity (body mass index greater than 95th centile for age and sex), smoking habits (more than five a day), oral contraceptive use, and physical activity.

**Results:** The students showed overweight or obesity in 14.5%, diabetes mellitus in 0.6%; familiar history and dyslipidemia 41.2%; 23.3% were sedentary; 3.8% mentioned use of oral contraceptives; 9.6% had arterial hypertension or pressure over the 95th centile during the test, and 9.6% declared themselves smokers. Through the obtained information on CVD risk factors, 36.7% of the students presented at least one risk factor, 27.8% from two to three, and 16.7% presented four or more risk factors.

**Conclusion:** This prevalence of the CVD risk factors presence is similar to that found in the literature, justifying more attention to this age range.

#### 030 A NEW METHOD FOR CARIES PREVENTION IN PUBLIC HEALTH: EFFICACY OF AN ANTISEPTIC MOUTHRINSE PREPARED WITH ALECRIM-PIMENTA ESSENTIAL OIL (LIPPIDIA SIDOIDES CHAM)

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**Introduction:** The northeast popular culture of Brazil has aboriginal origins that lead the population of the interior to favour natural, alternative ways to attenuate its illnesses. Medical and dental assistance in emergent countries such as Brazil still has gaps that favour the indifference of the public sector to primary attention in healthcare.

**Objective:** In order to devise a new method and practical alternatives for programmes in public health, the present study had as its main objective to evaluate the antibacterial action of the essential oil and extract of a plant, *Lippia sidoides* Cham, against *Streptococcus mutans* and *S. mitis*. *Lippia sidoides* Cham, popularly known in the state of the Ceará as alecrim-pimenta, is a plant of the family Verbenaceae, a finely branched shrub of regularly spaced twigs and short leaves. For the effective relief of toothache, it is customary for the provincial population to make and to smoke small cigarettes made from its falling leaves. From this information, the group of researchers started to evaluate the possible phytotherapeutic chemical effects present in the extract and the essential oil of alecrim-pimenta F-930.

**Methods:** Intending to develop a new buccal preventive method based on natural substances extracted from plants, samples were obtained from patients in the odontopaediatric clinics of The Federal University of the Ceará by getting them to chew a piece of wax. The subjects were distributed into two groups based on the mouth rinse they used: control and alecrim-pimenta. Both mouth rinses were applied by the subjects every 2 days for 2 weeks. At day 0 and day 15, the scores for bacteria plaque and gingivitis were evaluated in a blinded fashion.

**Results:** The results indicated that those subjects in the alecrim-pimenta group had significantly decreased ( $p<0.05$ ) total number counts of *S. mutans* and *S. mitis* compared with the other group, thus the extract and essential oil shows antimicrobial activity. This effect may be determined by its chemical composition, which is rich in thymol and carvacrol, two powerful phenolic substances.

**Conclusion:** These results present alecrim pimenta mouth rinse as an alternative way for caries control and this new method could be used in the Brazilian Government programme Saúde da Família. The extract and the essential oil of alecrim-pimenta could be an effective and cheap potential alternative in the context of community dental assistance in Brazil. The use of this new method could represent a new educational stimuli for poor communities not regularly assisted in health programmes.

#### 031 POPULAR EDUCATION: SYNCRETISM AND REPRESENTATIONS IN BRAZILIANS' PUBLIC HEALTH

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**Introduction:** The use of white as a colour in clothing such as tunics, sacramental vestments, and mantles has taken root in the history of humanity as symbol of expertise: either of wisdom, royalty, a high degree of spirituality, or superior purity. Among the old Brahmans, Egyptians, Christians, and Hindus, white symbolised connecting links between the body and the spirit. However, the use of white is not limited only to religious inheritances; it extends to health practices. In the Brazilian popular imagination, the image of white is associated with two areas—health and religion—especially for Afro-Brazilians, in the figure of the Pai de Santo of Umbanda.

**Objective:** This paper presents the first results of a research in progress carried out in a fishing village of Mundaú Beach (northeast Brazil), in the context of public health programmes and population education, observing how representations of the dentist are reassigned during and after the intervention process.

**Methods:** We adopted the principle that human actions are not determined by the objective components of a situation but by the representations of this situation. The study was designed on a qualitative basis and presents the point of view of the informers for the interpretation of the observed phenomena. The instruments of data collection used were the participants' comment and semi-structured interviews. The total number of subjects was 150: 75 schoolchildren (33 boys and 42 girls) aged 6–12 years, and 75 adults responsible for the children. The analyses of the data was carried through stages proposed by Bardin.

**Results:** The use of white for dentists' clothing was presented as starting point for the approach in the community. The images of white, in the popular imagination, appear as "the doctor" or "the healer", which meet in the "capoeira group", a new association for the researcher that

plays soccer and capoeira (a form of martial art) in the school. The fear of pain, strongly associated with the image of the dentist and his instruments, was recurrent in the children's reports. For them, the dentist was initially associated, through this negative image, with a hangman, who punishes those who disobey their parents' orders.

**Conclusions:** After the intervention, the representations of the dentist acquired positive characteristics: a "friend of capoeira", a "good person". The man that is seen in the corridors of the school and takes care of the children's dental health is not remembered as the "doctor" who pulls out teeth, but the friend with white clothes who shares the joy and happiness of being part of the capoeira group and the community.

### 032 DETERMINATION OF HEPATITIS A RISK AREAS IN REGION OF THE DUQUE DE CAXIAS, RIO DE JANEIRO, BRAZIL

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**Introduction:** Hepatitis A is a viral infection caused by the hepatitis A virus, a member of the hepatovirus family. Found in the environment, it can remain viable for days or months in drinking water, sea water, and soil. It presents only one serotype with response in the liver, detected in the blood, bile, and excrement. It is mainly transmitted by the orofaecal route, through water, food, handling of contaminated foods, and dissemination among persons (directly and indirectly). Unsafe sanitary and hygiene conditions favour disease dissemination. The lethality rate is minor, at 1%. The detection of antibodies is made through serology tests, between the third and tenth week. The treatment is unspecific and symptomatic, mainly consisting of bed rest.

**Objective:** This study estimated hepatitis A risk areas in the region of Duque de Caxias, Rio de Janeiro, Brazil, using data from the Project for Evaluation of the Impact Caused by the Guanabara Bay Clearing Programme on Health and Living Conditions.

**Methods:** Serum antibody tests against hepatitis A virus and a home-based survey were carried out in the study area. The sample comprised 1298 children between 1 and 10 years of age who lived in 11 census tracts of the second district of Duque de Caxias. Each sample was georeferenced in their home centroid. Geostatistics techniques allowed modelling spatial continuity of hepatitis A risk and its spatial estimation through ordinary indicator kriging. This method was also applied to environmental and socioeconomic variables. Bivariate associations were measured by odds ratio and its significance tested with 95% confidence intervals.

**Results:** A prevalence of 24.0% was found for hepatitis A. Precarious peridomiciliary conditions, both economic and environmental, were identified as significantly associated with occurrence of hepatitis A. Use of non-filtered water, period of water supply, and number of water taps at home were also associated. Estimated hepatitis A risk showed great variation across census tracts, and high risk clusters were detected. Results of cross validation of the four models were acceptable.

**Conclusions:** Periodomiciliary and domiciliary impact on hepatitis A was confirmed by a range semivariogram of 20 m. Geostatistics permitted disease estimation of risk and of socioeconomic variables using ordinary indicator kriging.

### 033 EFFECTIVENESS OF TUBERCULOSIS CONTROL PROGRAMME IN PORTUGAL. EPIDEMIOLOGICAL EVIDENCE FROM A RECENT INDEPENDENT 3 YEAR PERIOD OBSERVATION, EVIDENCE QUALITY, AND IMPROVEMENTS NEEDED

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**Introduction:** An annual independent observational study has been running since 2001 regarding the performance and population impact of the National Tuberculosis Control Programme (PNT). The Portuguese Observatory for Health Systems objectives frames this study. The study consists of epidemiological appraisals of relevant evidence considering information quality. A PNT specific information system (SVIG-TB) provides the required evidence, based on case notifications, and is managed by a coordinating team at the General Directorate of Health, which regularly issues its own report. PNT follows the World Health Organization's DOTS strategy countrywide, involving health services in a network, supported by SVIG-TB; sub-regional authorities and pneumological centres play a key role. PNT performance is crucial to face emerging threats to endemic tuberculosis control: HIV infection,

infected immigrants, and socially stressed groups. Standard indicators express programme performance and its impact (for which evolving notified morbidity is a proxy), and the natural history dynamics of tuberculosis and applied intervention resources back their interpretation. A sounder understanding of trends and of persisting knowledge limitations was found necessary, in order to improve the control being achieved.

**Objectives:** To reappraise the progress of controls in the last 3 year period observed (up to 2002), the quality of impact evidence used, and the usefulness of independent observations.

**Methods:** This evaluation approach concerned the Portuguese population. Dimensions of PNT quality were: apparent impact (notified incidence changes attributable to PNT) and programme performance (capability to detect new cases and treatment success). Regarding quality of impact evidence, aspects under focus were the appropriateness and consistency of incidence indicators. Information came from SVIG-TB and the process consisted of re-analysing the gathered evidence using the aforementioned criteria. Pertinence of observation exercises was assessed by reviewing their added value, beyond the PNT's own reports.

**Results:** Notified incidence was stable at 41/10<sup>5</sup>, the highest in the European Union, with an endemic age/sex pattern and 17% average underreporting. Sub-regions differed strikingly, some improving, others getting worse. Some with lower morbidity showed endemic age/sex patterns anyway, suggesting heavy under-reporting. Therapeutic success (a proxy of cure rate), already low (77%), declined slowly; other performance-related indicators (laboratory detection rates, length of correct treatment, coverage by directly observed treatment, and case contacts screening) showed a need for improvement. Independent appraisal exercises had the same information limitations as PNT reports, but allowed an external view and specific focusing on evidence quality, as the above discrepancies illustrate.

**Conclusions:** Notification based evidence may be misleading and requires caution. Geographic differences in incidence were important and somewhat inconsistent. PNT performance in stopping transmission was relatively low and may not be enough to face the emerging challenges to control. Independent appraisals confirmed the valuable service effort and enlightened evidence quality. Notification based evidence should be complemented with age/sex pattern related parameters and local key informers' expert opinions. Additional performance indicators should be empowered in the board panel. Geographic variation and discrepancies deserve a finer ecological study for reasonable explanations. Cooperation among networked institutions should be highly promoted, as well as independent observations.

### 034 ASSOCIATIONS BETWEEN SHORT AND LONG TERM UNEMPLOYMENT AND FREQUENT MENTAL DISTRESS AMONG A NATIONAL SAMPLE OF MEN AND WOMEN

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**Introduction:** Unemployment has been associated with poor psychological wellbeing. Using data from the 2001 Behavioural Risk Factor Surveillance System, we examined relationships between unemployment and frequent mental distress (FMD).

**Methods:** Data used for analysis were from the 2001 behavioural risk factor surveillance system. We used logistic regression to obtain multivariable adjusted odds ratio and 95% confidence interval. We adjusted for age, gender, race, education, body mass index, physical activity, smoking status, heavy drinking, and health insurance. Parameter estimates were obtained by maximum likelihood techniques and 95% CI were based on the standard error of the model coefficients.

**Results:** We defined FMD as 14 or more mentally unhealthy days during the previous 30 days, among 98 267 men and women aged 25–64 years. The age standardised prevalence of FMD was 6.6% (standard error 0.14) among employed adults, 14.0% (2.00) among adults unemployed >1 year, and 15.5% (1.18) among those unemployed <1 year. After adjustment, the relative odds of FMD were 2.09 (95% confidence interval (CI) 1.75 to 2.50) for adults unemployed <1 year and 1.88 (95% CI 1.31 to 2.71) for adults unemployed >1 year compared with employed adults. Similar patterns were observed across gender, race/ethnicity, education, income, and area unemployment groups.

**Conclusions:** Unemployed persons are a population in need of public health intervention to reduce the burden of mental distress. Public health officials should work with government officials to incorporate the health consequences of unemployment into economic policymaking.

### 035 RE-EMERGENCE OF SYPHILIS IN THE REGION OF MADRID

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**Introduction:** The incidence of sexually transmitted diseases in Spain fell to an all time low in the mid-1990s. During 2003, an increasing number of syphilis notifications were noted in the Region of Madrid and other cities of Spain. Similar increases have been reported from major cities in Europe, as well from large USA cities.

**Objective:** To characterise the epidemiology of syphilis notified to the Epidemiological Surveillance Network in the region of Madrid during 1998–2003.

**Methods:** This was a descriptive study of syphilis cases notified to Mandatory Notifiable Diseases Register in the Region of Madrid during 1998–2003. This register contains information about the personal characteristics, clinical data and results of laboratory. The case definition adopted in this surveillance network includes primary, secondary, and latent syphilis.

**Results:** During 1998–2003, a total of 512 cases of syphilis were notified (overall rate 1.4 cases per 100 000). Between 1998 and 2003 the rate increased by 26.9%, mainly due to a large increase among men (73.2%). In the past 2 years, the rise in the rate has been more apparent (61.4%). The male to female rate ratio was 3.4. Men aged 35–44 years showed the highest rate (3.1 cases per 100 000), followed by 25–34 year old men (2.6 cases per 100 000). The distribution by age group was similar in women, but the rates were lower than in men. Fifty four percent of cases were reported in Madrid city, most of them located in the centre and south of the city. Almost 21.7% of cases were immigrant people, with most of them acquired in the country of origin. Most cases did not have available information about the source of infection. Six percent of cases reported had documented unsafe sexual behaviours. Of these, 62.1% were in heterosexual people and 24.1% were in homosexual men. One case had co-infection with HIV and two cases were diagnosed in pregnant women.

**Conclusions:** The increase of syphilis cases observed is very similar to that reported from other large cities in Europe and USA, where similar trends have also been described. The re-emergence of syphilis in these areas is due to the increase in syphilis cases in young men, predominately affecting homosexual men. These results suggest an increase of unsafe sex practices in these people. It is necessary to strengthen the strategies of prevention in young people and to improve the collection of surveillance data of sexually transmitted diseases, as it has been difficult to identify a target group within the general population in order to implement specific intervention strategies.

### 036 FACTORS ASSOCIATED WITH THE DECISION OF SPANISH PHARMACISTS TO PRESCRIBE MEDICINES AND TO RECOMMEND A VISIT TO A DOCTOR

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**Introduction:** The pharmacist is the health professional who is closest to the general population, both physically and psychologically. The position of the pharmacist in the drug consumption chain allows this professional to detect mistakes in prescriptions, prevent drug interactions and adverse drug events, and give advice on the adequate use of medicines or, in general, on health related problems. The pharmacist responds to the patient's demand by an intervention that consists of giving medical advice, prescribing medicines, or recommending the patient to attend a doctor.

**Objective:** To identify the factors associated with the decision to dispense a drug and those related with the decision to recommend the customer to visit a doctor.

**Methods:** We carried out a cohort study on a sample of 166 pharmacists in northwest Spain. We gathered 7010 patient counselling interventions. During a personal interview, we collected information on the pharmacist's education and speciality, and on the characteristics of the pharmacy and its socioeconomic environment. We constructed logistic regression models using as dependent variables the prescription by the pharmacist and the recommendation to consult a doctor.

**Results:** The initial response rate was 98.8%, and 60% of the subjects completed follow up. We included 6034 pharmacists' interventions in the final analysis (86.1% of the total number). Greater experience of the pharmacist (odds ratio (OR) 0.58), being a pharmacy owner (OR 0.76), and a more advanced age of the patient (OR 0.55) were associated with a lower level of prescription. In contrast, being a female patient (OR 1.14) and working in a pharmacy that has a heavy workload (OR 1.48) were associated with a higher level of prescription. On the other hand,

greater experience of the pharmacist (OR 2.34) and more advanced age of the patient (OR 1.45) were associated with a higher frequency of advice.

**Conclusion:** We show that the characteristics of the pharmacist, pharmacy, patient, and consultation are determinants of the patient's counselling. Future research should aim at finding out why these characteristics are predictors of the patient counselling. In the same line, further research should investigate opinions and attitudes related to counselling.

### 037 SURVEILLANCE ON VARICELLA IN EXTREMADURA, SPAIN, THROUGH THE SENTRY SYSTEM

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**Introduction:** The Sentry system is based on the voluntary cooperation of randomly selected health professionals, and is useful for investigating processes of high incidence or importance, and of homogeneous distribution among population.

**Objective:** Our target was to know the epidemiology of varicella in the autonomous region of Extremadura, Spain, to decide on the convenience, need and efficiency of implanting strategies of vaccination.

**Methods:** During the period 2001–2003 varicella was surveyed by a random selection of 26 first line physicians from the public health system, who attend to a population of 26 008, who gave weekly notifications according to protocol of all the cases attended by them. A descriptive study was made on variables of age, gender, symptoms, type and place of exposure, risk factors, complications, and type of school or work absence. The population denominators were calculated on population attended weekly by collaborating physician.

**Results:** The physicians reported 495 cases of varicella: 249 female (50.6%) and 243 male (49.39%). The average age was 8.6 years. Symptoms were: rash (100%), fever (58.13%), general indispotion (49.19%), migraine (23.78%), and anorexia (20.73%). The exposure to possible infection source is described in 391 cases (79.47%), of which 311 (79.54%) had contact with sole cases of varicella, 75 (19.18%) were part of an epidemic outbreak, and 5 (1.28%) had contact with cases of herpes zoster. The place of exposure was registered in 239 cases (48.57%): school, 154 cases (64.44%); family, 84 cases (35.15%); and social environment, 1 case (0.42%). Only three cases presented previous immunodepression. There were complications in 16 cases (3.25%): 13 cases of cutaneous infection (81.25%), 13 bacterial cutaneous infections (81.25%), 1 pneumonitis (6.25%) and 1 otitis. In one, admission to hospital was reported. Symptomatic treatment was reported in 268 cases (54.47%), 14 cases (5.22%) received antiviral treatment, and 13 cases (4.85%) received both kinds of treatment. No cases received immunoglobulin. In 24 cases (4.87%), school absence was registered, and in another 24 cases (4.87%) there was absence from work; general mean was 0.29 days for each case.

**Conclusions:** The Sentry system may produce useful information on the knowledge of the disease burden and sanitary management. From this study, a wider one on varicella vaccine efficiency has been derived.

### 038 MENINGOCOCCAL DISEASE BY NEISSERIA MENINGITIDIS B:4:P1.5 IN SÃO PAULO, BRAZIL OVER THE 1986–2001 PERIOD: EPIDEMIOLOGICAL AND MOLECULAR ASPECTS

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**Introduction:** In 1988, the city of São Paulo was hit by meningococcal disease. The epidemic was caused by *Neisseria meningitidis* (NM) B:4:P1.15, electrophoretic type ET-5, and lasted until 2001.

**Objective:** To study the epidemiological aspects of the epidemic over the 1986–2001 period, and molecular characteristic of the epidemic strains isolated, focusing on the epidemiological aspects of meningococcal disease by serogroup B and molecular characteristics of epidemic strains.

**Methods:** The present study includes confirmed cases by NM isolates among MD patients living in the city of São Paulo. The clinic epidemiological information was obtained from the Meningococcal Disease Surveillance System, and the NM lyophilised strains were available from National Reference of Bacterial Meningitis (Instituto Adolfo Lutz). We have analysed 551 strains of NM B:4:P1.15 (ET 5) by the pulsed-field gel electrophoresis (PFGE) technique. The profiles were generated by PFGE, using dendrograms for checking strain similarities. A

PFGE based clonal group was defined as isolates with a three band difference or 80% similarity on dendrogram or both. The data analysis was spread over three periods starting in 1986/1987, with the second period 1988/1996, and finalising in 1997–2001. Those periods were named pre-epidemic, peak, and fall of the epidemic.

**Results:** Of the isolates, 98.0% were identical or closely related. We observed the predominance of a clonal group with six different genetic profiles generated by the *SpeI* enzyme; 87.4% of them were classified as: A, A1, or A2, however 1.98% of MN B:4:P1.15 strains were designated as a non-clonal group. The genetic profile presented similarity higher than 80% with 1.5% tolerance. During the pre-epidemic period (1986/1987) the A1 profile was not observed. The meningococcal disease incidence caused by NM B:4:P1.15 varied between 0.3 and 1.8 per 100 000. During the epidemic period, the peak of which occurred in 1996, in poverty-stricken boroughs, the incidence hit figures around 6.0 to 8/100 000, in contrast with almost zero incidence found in affluent neighbourhoods. For strain serogroup B, the lethality rate was around 18% whereas 12% were found for the remaining serogroups.

**Conclusions:** The epidemic was associated with a single clonal group of NM B:4:P1.15. The epidemic period lasted longer and presented lower incidence than those observed with typical NM serogroups. The analysis also indicated large differentials in several São Paulo boroughs, with mainly poorer areas being worst affected.

### 039 EFFECT OF HEALTH SERVICES SUPPLY ON HOSPITAL ADMISSION IN BRAZIL

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**Introduction:** In a previous study, we found that the main determinant of hospital admissions in Brazil was health needs and that poor people had more chance of being admitted, controlling for health needs. In addition, people with health insurance coverage and a regular health service had more chance of being admitted.

**Objective:** To extend this previous model to incorporate information about health services supply.

**Methods:** This was done using hierarchical models, using the person as the first level and the state of residence as the second level. Models were adjusted separately for adults and children. Two models were adjusted for each group: the first using logistic regression with having had an admission or not as the response variable and the second using Poisson regression with the number of admissions as the response variable. This last model was adjusted only for persons that had at least one admission.

**Results:** Considering health needs, predisposing and enabling individual variables, results were similar to our earlier results. Only 1–3% of the variability in hospital admission utilisation could be attributed to health supply differences at the state level. In logistic models, number of beds and number of doctors per capita were associated with admission chance. For adults, odds ratio (OR) was 1.21 with 95% confidence interval (95% CI) 1.06 to 1.39 and 0.85 (0.78 to 0.94) respectively. For children, OR was 1.40 (1.22 to 1.61) and 0.82 (0.74 to 0.91) respectively. Hospital size, percentage of public beds, average number of admissions per capita, average number of medical consultations per capita and number of public outpatient units were not associated with admission chance. In Poisson models, any of the supply variables were associated with admission chance.

**Conclusion:** Our results suggest the existence of a supplier induced demand effect considering hospital beds. On one hand, regions with more hospital beds could have unnecessary admissions that could be avoided if alternative therapeutic options were available. On the other hand, in regions with fewer beds, necessary admissions could not have been achieved because of absence of available beds. The inverse association of number of doctors with hospital admissions demonstrated the influence of outpatient care on hospital use. Our results should be viewed considering the peculiar conformation of Brazilian health system, composed by a public Unified Health System (SUS) and by a supplemental market regulated private system, and with a very unequal geographical distribution of doctors.

### 040 HUMAN IMMUNODEFICIENCY VIRUS TRANSMISSION FROM MOTHER TO INFANT IN FORTALEZA, BRAZIL: REVEALING THE EPIDEMIOLOGICAL SITUATION IN A CAPITAL OF THE NORTHEAST

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**Introduction:** In the last 20 years the human immunodeficiency virus (HIV) infection epidemic has been increasing all over the world in women. In that context, HIV transmission from mother to infant appears as one of the challenges for public health. Several studies have confirmed the effectiveness of zidovudine in reduction of HIV transmission from mother to infant. In Brazil, since 1996, the recommendations of the ACTG 076 protocol have been in place. In Ceara, actions were systematised starting from 2000 without, however, being submitted to evaluation.

**Objective:** To describe and analyse the use of implemented initiatives for reduction of HIV transmission from mother to infant in infected pregnant women who had children in public maternity units in the municipality of Fortaleza, Ceará, from 1999 to 2001.

**Methods:** This study was accomplished in two stages: (a) relationship of databases from different official information systems, and (b) active search in subjects' medical records in identified public maternity units.

**Results:** In the first stage of the study, 138 pregnant women infected with HIV were identified. It was observed that 48.6% (67/138) were diagnosed during the prenatal period and only 47.5% (48/101) of cases remained among those that accomplished the prenatal; they took zidovudine, in the correct way, at all stages of the prophylaxis, including administration to the newborns.

**Conclusions:** In spite of the efforts accomplished for application of those strategies, the epidemiological data regarding the interventions for reduction of the transmission are still scarce in both Brazil and Ceará. It is very important to investigate the number of women that did not have access to the different strategies for reduction of vertical transmission. Continuous sensitisation and training are very important for all healthcare workers involved with attending pregnant women to ensure correct application of all methods to reduce HIV transmission from mother to infant.

### 041 INFLUENCE OF THE ENVIRONMENTAL EXPOSURE TO PAHS ON THE CELLULAR SUSCEPTIBILITY TO THE INDUCTION OF OXIDATIVE TYPE OF THE DNA DAMAGE

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**Introduction:** To investigate whether environmental exposure to polycyclic aromatic hydrocarbons (PAHs) may affect cellular susceptibility to the induction of the oxidative type of the DNA damage and cellular capacity to repair it.

**Methods:** The whole group under study comprised male donors (about 350 donors, average age 33.6 years) reported as healthy. The group consists of subgroups from inhabitants of various cities and countries: Prague, Czech Republic; Košice, Slovak Republic; and Sofia, Bulgaria. Ambient air and personal monitoring for all groups investigated was performed and has been reported elsewhere.<sup>1</sup> In general, in each subgroup, the control group consisted of male donors unexposed to PAHs. Group exposed to environmental pollution containing PAHs consisted of city policemen or bus drivers. A challenging dose of x rays, known as an environmental agent inducing, among others, free radicals and oxidative types of damage, was proposed to study a variation between individuals in the response to the gene toxic agents present in the environment. The alkaline version of the SCGE assay was applied to evaluate the DNA damage induced in both conditions, in vivo (DNA detected in defrosted lymphocytes) and in vitro, in the studies with the challenging treatment. Repair efficacy was evaluated by comparing the DNA damage detected immediately after the challenging exposure with the residual damage detected in irradiated cells after the incubation, allowing the cells to complete a repair process (generally longer than 0.5 h). The half life of the repair in lymphocytes of young healthy male donors estimated from the studies of the repair kinetics was ~ 5 mins.

**Results:** In all investigated subgroups results show that environmental exposure to PAHs has significantly decreased the cellular efficiency of DNA repair process ( $p < 0.005$  to  $p < 0.05$ ). Our results also show that repair efficiency can be significantly affected by genetic polymorphism

(i.e. exposed to PAHs donors, homozygous for mutation in polymorphic enzyme GSTP1 ILE/VAL have shown levels of residual/unrepaired DNA damage significantly higher than no exposed donors, on average 74% versus 48% respectively,  $p < 0.008$ .) as well as the other confounding factors related to lifestyles such as smoking habit history or education level.

**Conclusions:** Obtained results suggest that environmental exposure to PAHs can significantly decrease cellular repair capacity of exposed subjects and that it may, as a consequence, increase the risk of harmful health outcome.

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#### 042 LEGIONELLOSIS SURVEILLANCE IN THE REGION OF MADRID, SPAIN, FROM 1998 TO 2003

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**Introduction:** Legionellosis has been a mandatory weekly reportable disease in Madrid since 1997.

**Objective:** The aim of this study was to know the trend of cases notified during 1998-2003 and to determine the epidemiological characteristics of the last year.

**Methods:** Descriptive study. The information source was the compulsory report of illness (EDO) surveillance system. Global incidence (rate by 100.000 inhabitants) was estimated and additional information such as age, sex, risk factors, symptoms and others are analysed.

**Results:** The number of cases and incidence rates observed from 1998 to 2003 were: 16 and 0.31 (in 1998), 33 and 0.67 (1999), 42 and 0.84 (2000), 53 and 1.09 (2001), 135 and 2.47 (2002) and 83 and 1.50 (2003). Incidence values increased from 0.31/100 000 in 1998 to 2.47/100 000 in 2002. During 2003, 83 cases of legionellosis were notified; 86.7% were male, mean (SD) age 59 (15.3) years. The highest proportion of cases was observed in people older than 50 years (67.5%). The most common professional activities were: retired (22 cases; 32.3%), drivers (7; 10.3%), and waiters and hotel business workers (5; 7.3%). There were 22 cases (26.5%) observed in October, 11 (13.3%) in January, and 10 (12%) in July. The main symptoms were fever in 62 cases (80.5%), respiratory symptoms (cough, difficulty in breathing, pneumonia) in 56 (72.7%), neurological symptoms (headache, prostration, mental confusion) in 20 (26%), and digestive symptoms (vomiting, diarrhoea) in 15 (19.5%). Complications were presented in 24 (28.9%) cases, the most frequent of them being respiratory insufficiency (11 cases; 45.8%) and multiorgan failure (7; 29.2%). Admission to intensive care was required for 16 cases (22.5%). There were 79 confirmed cases (95.2%) and four (4.8%) were suspicious/probable. *Legionella* urinary antigen was detected in 76 cases (96.2%) and positive culture in three (3.8%). The fatality rate was 6%. The risk factors were: 67.6% smoking (67.6%), pulmonary obstructive chronic disease (23.3%), diabetics 1 (5.9%), cancer (8.5%), immunodepression (7%), corticoid treatment (7%), receipt of organ transplant (5.1%), and nephropathy (5%). There were 72 cases (86.7%) that were community acquired, 10 (12%) were associated with travelling, and one (1.3%) was a nosocomial case.

**Conclusions:** We have observed a rising pattern in the incidence of legionellosis during the study period. This trend is probably due to the introduction of the *Legionella* urinary antigen test, which makes possible an early diagnosis of this disease and a shorter reporting delay. The observed incidence rates for Madrid are less than the national and European rates. The average age is similar to other studies. Smoking and pulmonary obstructive chronic disease are the main risk factors.

#### 043 DECENTRALISATION OF THE ACTIONS OF SANITARY SURVEILLANCE: IDENTIFICATION OF THE AGENCIES OF SANITARY SURVEILLANCE OF THE CITIES IN GPSM IN THE STATE OF RIO DE JANEIRO

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**Background:** The Centre of Sanitary Surveillance of the State of Rio de Janeiro (CVS-RJ) intends, with the decentralisation of the actions of low complexity sanitary surveillance for the cities, to take charge of the legal determination.

**Objective:** To present the situational identification of the agencies of sanitary surveillance of the cities in full management of the system (known as the GPSM).

**Methods:** Analysis of the 22 sanitary surveillance agencies in the GPSM, as detailed in the Unified Health System (NOB/SUS 01/96 96), in the period July-December 2002, through a standard questionnaire applied for the CVS-RJ and through participant comment, whereby a multiprofessional team, during specified visits, met with the technician team of local services and, as well as the collection of data, endeavoured to guide them to changing their information techniques and administrative organisation.

**Results and Conclusion:** On the basis of the results, we conclude that the majority of the municipal sanitary surveillance agencies of the GPSM possess deep technician operational difficulties in the development of the located actions, denoting the necessity to raise awareness of the municipal managers to the importance of these actions and to guide them in the effective structure of local sanitary surveillance in partnership with the CVS-RJ.

#### 044 FACTORS ASSOCIATED WITH INFLUENZA VACCINATION IN THE ELDERLY IN A TOWN IN SOUTHEASTERN BRAZIL IN 2003

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**Introduction:** Even though influenza vaccination has been available and free in Brazil since 1999, vaccine coverage is still insufficient in many regions of the country.

**Objective:** The aim of this work was to estimate the real influenza vaccination coverage and to analyse variables related to the elderly attendance in the National Immunization Campaign in a town in the southeastern region, in 2003.

**Methods:** A cross sectional study was performed in a random systematic sample of people over 60 years old ( $n = 365$ ) in Botucatu, São Paulo State (130 000 inhabitants) to estimate the real immunisation coverage and variables related to vaccination in 2003. A multiregression logistic model was adjusted, with vaccination (yes = 1, no = 0) as the dependent variable. Individual characteristics such as sex, age, socioeconomic status, chronic disease, hospitalisation, time living in town, marital status, occupation, habits (smoking, drinking, exercising, eating), and community participation were checked as independent variables.

**Results:** The influenza vaccine coverage was 63.2% (95% confidence interval (CI) 58.25 to 68.15) in the town in 2003. Variables associated with immunisation that remained in the final model ( $p < 0.05$ ) were age (odds ratio (OR) 1.09, CI 1.06 to 1.13); arterial hypertension (OR 1.92, CI 1.18 to 3.13); community participation (OR 1.63, CI: 1.01 to 2.65). Chronic patients (diabetics, pulmonary and cardiac illness) were not vaccinated as frequently as would be expected in this higher risk group, and the same occurred in the lower risk group ( $\chi^2 = 2.45$ ,  $p = 0.12$ ). Immunisation administered to arterial hypertension patients was the exception. Socioeconomic status (per capita income, number of persons sharing a room in the house, number of school years) and habits were not statistically associated with attendance in the campaign in 2003 ( $p > 0.20$  in univariate analysis and/or  $p > 0.05$  in the final model). Elderly participation in social and community events (volunteer work, reunions, and district activities) has increased vaccination status in the city.

**Conclusion:** The access to vaccine seems not to be the main problem, as socioeconomic factors have not influenced immunisation and coverage was higher among the oldest subjects. Technical information about influenza vaccine should be strongly and clearly transmitted to health workers, especially physicians, in order to increase protection to patients with chronic disease.

#### 045 STD/AIDS PREVENTION ACTIONS EVALUATION: RIO DE JANEIRO CITY CASE STUDY

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**Introduction:** This research aimed to evaluate STD/AIDS prevention actions by the State Public Health Services (GO) and Rio de Janeiro City's Civil Society Organization (CSO), targeting the young in situations of social vulnerability, justified by the gaps and fragility of discourse and of prevention practices aimed at a highly vulnerable STD/AIDS group.

**Objective:** To identify the most successful experiences, considering criteria such as male condom availability, educative approach, and commitment to risk reduction and life protection practices, in order to define more effective implementation and programme design strategies.

**Methods:** The chosen methodological strategy was the case study. The selected cases were the GO and CSO, considered successful according to pre-established criteria. Considering the object is complexity, a context is characterisation and an analysis of prevention actions, implementation and its effects were made. Such steps were fulfilled from the construction of logical matrices of the programme and theoretical evaluation, based on documental analysis, a young focal group, semi-structured interview (the young people, managers, and education/health professionals) and observation of the activities involving male condom distribution and a didactic pedagogical approach at the chosen GO and CSO.

**Results:** The research has been guided by the prevention basics (condom policy implementation and distribution, reception of condoms by users, educative practice characterisation, and the users' view of the practice) and evaluation. The preliminary results show that GO and CSO work in partnership, but CSO is more successful in implementing the actions.

**Conclusions:** The evaluation of the prevention programme proposal is pertinent and highly relevant because it makes it possible to verify the transformation of the prevention agenda into action and whether these were transformed into quality actions.

#### 046 RELATIONS BETWEEN EDUCATION, INCOME AND BODY MASS INDEX OF EMPLOYEES IN A UNIVERSITY IN RIO DE JANEIRO, BRAZIL: THE PRÓ-SAÚDE STUDY

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**Introduction:** Obesity is becoming one of the largest contemporary public health problems of the past decades in societies with several degrees of development. In Brazil, several studies have identified an inverse association between education and obesity among women, the same tendency as that observed in developed countries. Among Brazilian men, there is also a tendency to a direct association between obesity prevalence and income.

**Objective:** To investigate the association between education and income with body mass index (BMI).

**Methods:** We studied 3963 public university employees, participants in Phase 1 of a longitudinal study. Their weight and stature were measured and other information obtained through a multidimensional questionnaire.

**Results:** Obesity prevalence was about four times higher among adult women with a lower (32%) compared with those with a higher educational level (9%); among men, the educational level was not significantly associated with obesity. In a multiple regression analysis, it was observed that, among men, education and per capita family income were not associated with BMI. Among women, education but not income was significantly and inversely associated with increase in IMC ( $p < 0.001$ ).

**Conclusions:** Education was an important predictor of BMI levels in women, even in a hard working population that presents better indicators of socioeconomic position than the general population. Those results corroborate other Brazilian studies, reinforcing the importance of social determinants in obesity, mainly among women.

#### 047 HCV INFECTION RISK IN DENTAL PRACTICE

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**Introduction:** Together with hepatitis B virus and HIV, hepatitis C virus (HCV) is among the most important blood transmitted agents, and as such is of special importance for healthcare workers in hospitals and clinical practice. While the HIV transmission rate in healthcare has never been high, there was a very considerable risk of HBV transmission among hospital and healthcare personnel in the years preceding the vaccination era. Dental surgeons and dental assistants are at a particular risk of exposure to blood and to blood contaminated aerosols in their daily routine.

**Objective:** It seemed of special importance to determine a possibly elevated HCV infection rate among dentists and dental care personnel.

**Methods:** Serum samples of 186 dental surgeons/assistants/technicians in dental practice, and serum samples of 70 dental surgeons/assistants/technicians working at the University Hospital Dental Clinic, University of Graz, Austria, were tested for antibodies against hepatitis C. In cases of positive results, confirmation by immunoblotting and PCR was carried out.

**Results and Conclusion:** In more than 250 samples, only one tested positive (positive screening, immunoblotting, and RNA positive). These

results show, in concordance with other studies, that the infection risk with HCV for dental personnel does not seem to differ from the infection risk among other sections of the population.

#### 048 AN OUTBREAK OF GASTROENTERITIS IN A NURSING HOME OF THE COMMUNITY OF MADRID, SPAIN, 2004

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**Introduction:** In January 2004, an outbreak of gastroenteritis was detected in a nursing home in Madrid. The doctor reported that during the previous 5 days, the residents and some workers of the first floor had had diarrhoea. The PEAC was invited to study the outbreak and to determine possible risk factors. In the nursing home there are 230 workers and 475 residents, with the residents distributed across four floors: ground floor 63, first floor 120, second floor 143, and third floor 140, and 17 people who daily attend the senior citizens day centre. In this residence, other gastroenteritis outbreaks had been previously reported.

**Methods:** For the descriptive study, 483 questionnaires were administered. A retrospective cohort study was carried out in the first floor, due to the high attack rates (AR) there. A case was defined as a person who developed either diarrhoea or vomiting (>two loose stools/24 h), with or without nausea or fever, between 5 January and 12 February. The assisted residents lived on the first floor, which is the only floor that has geriatric baths. Nevertheless there is only one geriatric bath in each gallery and all the residents of a gallery have to use the same bath. AR was calculated among inmates and workers for the different floors, and for the use of the geriatric bath. The relative risk (RR) and 95% confidence intervals (CI) were computed.

**Results:** The case definition was met in 82 people. The main symptoms were diarrhoea (95%) and vomiting (29%). The median time duration of the disease was 3.2 days for the residents and 4.4 days for the workers, with evolution towards the healing of the cases. The global AR was 12% (3% workers and 16% residents). The highest AR was observed in the first floor (AR=30). On this floor, AR was lower for those living in gallery A compared with residents of the galleries B, C or D (risk ratio (RR) 0.46; 95% confidence interval (CI) 0.17 to 1.08;  $p=0.05$ ). There was a statistically significant association between use of the geriatric baths and the disease (RR 2.2; 95% CI 1.7 to 3;  $p=0.000001$ ). Astrovirus was isolated from three faecal samples.

**Conclusions:** The deficiencies in hygiene conditions caused by the lack of geriatric baths caused this outbreak of GE by astrovirus. We made a presentation to the workers, to recommend: (a) changing gloves and washing hands between cleaning one resident and another; (b) change of clothes after cleaning the residents and before feeding them; and (c) excluding ill staff from work until 48 hours after symptom cessation. The specific indications derived from our study included changes in the structure of the geriatric bath.

#### 049 UNMET NEEDS: PHYSICAL DISABILITY AND SOCIAL SUPPORT

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**Introduction:** Social support must be considered as an important factor that affects human functioning and wellbeing, and plays an important role in everyone's life, especially for those who are physically disabled.

**Objective:** In this contribution we examined how disabled subjects consider their social environment in terms of perceived availability of support.

**Methods:** Data from the 2001 Belgian Health Interview Survey was used. The sample consisted of 7730 subjects aged 15 years and older. Four dimensions of social support were estimated using the subscales of the MOS Social Support Survey; emotional support (eight items), affective support (three items), instrumental support (four items) and positive interaction (four items). For each of these scales, the mean score (ranging from 1 to 5) was calculated and recorded for two groups (referring to a low versus a high level of support). Long-term physical (dis)ability was estimated using the World Health Organization recommended questionnaire (covering 10 items on activities of daily living, mobility and sensory functions). Each of these items was scored on a 3 point scale. The summary score for disability was the highest value assigned for any of the 10 items, and took a value in the range 0 (no

disability) to 2 (severe disability). The association between the level of social support and disability was assessed using the odds ratio (OR) and 95% confidence interval (CI) from logistic regression models controlling for age, gender, and household characteristics.

**Results:** Of the subjects, 9.1% considered their social environment lacked emotional support, 9.7% could not count on instrumental support, and 11.2% lacked affective support, while 8% missed positive interaction. Regarding disability, 81.4% of the subjects were not physically disabled, 12.8% were moderately disabled, and 5.8% severely disabled. On three of the four MOS subscales, the results showed that disability was linked to perceived poor social support. Subjects with a moderate or severe disability reported less emotional support (respectively OR 1.7; CI 1.4 to 2.1 and OR 1.6; CI 1.2 to 2.2), affection (OR 1.4; CI 1.2 to 1.8 and OR 1.4; CI 1.1 to 1.9), and positive interaction (OR 1.5; CI 1.2 to 1.9 and OR 1.8; CI 1.3 to 2.4). No indication was found that disability was linked with a lack of instrumental support (OR 1.2; CI 0.9 to 1.4 and OR 1; CI 0.7 to 1.4).

**Conclusions:** Physically disabled subjects perceived their social environment as less emotionally supportive, less affective, and with a lower level of positive interaction. Perceived instrumental support did not differ between subjects with or without disabilities, although the former probably has greater need for this kind of support. Formal and informal aid to the disabled may be too often restricted to instrumental aid and not take into account the need for emotional and affective support and the need for positive interaction.

#### 050 THE BENEFICIAL EFFECTS OF ANTENATAL STEROIDS ARE INFLUENCED BY THE EARLY CLINICAL CONDITIONS OF PRETERM INFANTS

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**Introduction:** The beneficial effects of antenatal steroid (AS) administration on neonatal mortality and morbidity of preterm infants have been demonstrated. However, the possible interaction between AS administration and early clinical conditions on neonatal mortality has received little attention.

**Objective:** We investigated the effects of AS on the clinical conditions of preterm infants shortly after birth, and we estimated the residual contribution of AS, after adjusting for the clinical risk index for babies (CRIB), on in hospital mortality.

**Methods:** The study population consisted of all infants under 32 weeks' gestation or with a birth weight  $\leq 1500$  g admitted within the first week after birth to 11 neonatal intensive care units in the Lazio region of central Italy during the years 1999–2001. A standardised form was used to collect relevant perinatal clinical data, including those for the calculation of the CRIB. AS treatment was defined as full (two doses given more than 24 hours or less than 7 days before delivery) or partial (other schedules of AS treatment) in preliminary analyses, the effect of both AS treatments produced similar results. Differences between medians were tested by the Mann-Whitney test. The Cox proportional hazards model was used to estimate simultaneously the effect of AS treatment and CRIB score on in hospital survival by hazard ratios (HR) and 95% confidence intervals (95% CI). We excluded 40 infants because of missing data on CRIB.

**Results:** Among the 1255 infants included in the study, 66.9% received AS treatment, 49.2% had a CRIB  $<2$ , 30.7% a CRIB between 2–4, and 20.1% a CRIB  $>4$ . The median CRIB was significantly higher in those not receiving AS (median = 2) compared with those receiving AS (median = 1) ( $p < 0.01$ ). The hospital survival at 30 days from admission was 97.4% (95% CI 95.8 to 98.4), 84.3% (80.3 to 87.6), and 37.6 (31.6 to 43.6) among infants with CRIB in the 0–1, 2–4, and  $>4$  strata, respectively. Survival was 86.1% (95% CI 83.6 to 88.3) and 71.7% (67.1 to 75.8) among AS and non-AS treated infants, respectively. In a Cox model including CRIB, AS, gender, and inborn/outborn status, we found a significant independent increase of risk for non-AS treatment (HR 1.81, 95% CI 1.39 to 2.35) and for CRIB  $>1$  (6.63, 3.84 to 11.47 for CRIB 2–4; 36.92, 22.03 to 61.87 for CRIB  $>4$ ). When we performed separate models for the three different levels of CRIB, we found that the independent increased risk for non-AS treatment was mainly in CRIB 2–4 (CRIB 0–1: HR 1.03, 0.34 to 3.09; CRIB = 2–4: HR 1.71, 1.03 to 2.83; CRIB  $>4$ : 1.16, 0.82 to 1.63).

**Conclusions:** Our findings confirm previous studies regarding the beneficial effect of AS on early clinical conditions of preterm infants. A positive effect of full AS treatment on mortality was mainly among those babies with an intermediate CRIB score (2–4) while for the sickest babies the benefit of AS treatment disappears. Further studies with larger sample size are needed to confirm our evidence.

#### 051 EVALUATION OF A REHABILITATION PROGRAMME FOR FACTORY WORKERS WITHIN THE ENTERPRISE (VOLKSWAGEN AG, WOLFSBURG, GERMANY)

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**Introduction:** The rehabilitation centre of Volkswagen AG tries to enable factory workers with significant health problems to resume their work as soon as possible within the enterprise. Changes in subjective physical and mental health and fitness, as well as the perceived situation at the workplace, were evaluated during and after the rehabilitation programme.

**Methods:** Participants filled in questionnaires between 1 February 1999 and 9 October 2002. Questionnaires were handed out before the rehabilitation programme, at the end of the programme and 6 months after the end of the programme. Self assessment questions concerned physical health, mental wellbeing, fitness, and satisfaction with the present situation at the workplace.

**Results:** Since 1994, 548 individuals have participated in the programme. Mean age was 39.5 years; most participants were between 30 and 49 years old. Of the participants, 73% had musculoskeletal disorders, 16% cardiovascular diseases, 3% neoplasms, and 8% had other illnesses. Mean sick leave before the programme was 6.4 months; mean duration of the programme was 6.2 months. After the programme, 38% could return to their previous workplace, while 48% carried out a different work within the factory. Between 1 February 1999 and 9 October 2002, 276 individuals participated in the programme; 132 of them returned the first questionnaire. The data of the 50 participants (10 women, 40 men) who returned all three questionnaires were analysed in this study. In the third questionnaire, 75.8% stated that the programme overall fitted their personal needs. On a scale from 1 (best) to 5 (worst) participants rated: their health in general: before, 3.87; at the end, 3.83, after 6 months, 3.44 ( $p < 0.001$ ); their concern with reduced physical or mental fitness (3.13, 2.86, and 2.86 respectively) ( $p = 0.007$ ); the impact of their illness on their work situation: (4.00, 3.80, and 3.51 respectively) ( $p < 0.001$ ); and their worry of being laid off: (3.10, 2.84, and 2.50) ( $p < 0.001$ ).

**Conclusions:** Perceived physical health, mental wellbeing, fitness, and satisfaction with the present situation at the workplace were improved after participation in the rehabilitation programme. We could not link these subjective data with findings on objective health outcomes and performance at work. The available data do not allow determination of to what extent the improvement is due to the programme or to other factors.

#### 052 LIPID PROFILE IN A COMMUNITY SAMPLE OF PORTUGUESE ADULTS

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**Introduction:** Lipids and lipoproteins constitute a major risk factor for arteriosclerosis, a leading cause of mortality in developed countries.

**Objective:** To describe the lipid profile, including the serum concentrations of total cholesterol (TC), triglycerides (TG), low density lipoprotein cholesterol (LDL-C), and high density lipoprotein cholesterol (HDL-C), in an urban Portuguese population.

**Methods:** We conducted a cross sectional survey with participants recruited by random digit dialling. Information concerning social, demographic, personal and family medical history, and behavioural characteristics were obtained using a face to face interview. Plasma lipid measurements were obtained from a 12 hour fasting venous blood sample. Categories for TC, TG, LDL-C, and HDL-C followed the criteria of the Adult Treatment Panel III. Data were stored using Epi-Info and analysed separately for men and women with SPSS, using one way analysis of variance.

**Results:** We studied 2132 subjects (1321 women, 811 men), with a mean age of 53.9 years (SD = 14.9). The mean (SD) concentrations of TC, LDL-C, HDL-C and TG were respectively, 221 (47.0), 139.4 (43.0), 57.3 (16.6) and 120.4 (75.2) mg/dl. Overall, 66.8% (1338/2004) had TC levels  $\geq 200$  mg/dl, 29.4% (567/1930) had LDL-C levels  $\geq 160$  mg/dl, 22.9% (447/1949) had HDL-C levels  $<40$  mg/dl (male) and  $<50$  mg/dl (female), and 23.7% (472/1988) had TG levels  $\geq 150$  mg/dl. The mean TC level was significantly higher in females (272 versus 256 mg/dl;  $p < 0.05$ ), but the mean HDL-C level was significantly lower compared with that observed in males (61 versus 52 mg/dl;  $p < 0.001$ ), contributing to a higher atherogenic ratio (TC/HDL-C) in men.

**Conclusions:** The high prevalence of dyslipidaemia, particularly hypercholesterolaemia, in the studied sample highlights the need for primary prevention programmes and is in line with the high cardiovascular disease mortality in the Portuguese population.

#### 053 HEALTH RELATED QUALITY OF LIFE MEASURED WITH THE SF-8: RESULTS OF THE GERMAN NATIONAL HEALTH TELEPHONE SURVEY 2002/2003

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**Introduction:** The eight item short form questionnaire (SF-8) is a generic quality of life instrument constructed for use in population health surveys. The German version of the SF-8 has not been used in population health surveys so far.

**Objective:** To examine the association between sociodemographic factors, morbidity, and health related quality of life measured with the SF-8 in a representative sample of the adult population in Germany.

**Methods:** The SF-8 standard version (4 week recall) was used to measure health related quality of life in a computer assisted telephone interview carrying out a health survey of a representative sample of the adult residential population in Germany (n=8318, age 18 years and above). The survey included questions on chronic diseases and health complaints, health related behaviour, health service utilisation, and socioeconomic conditions.

**Results:** Women reported lower quality of life than men both in the physical (PCS) and in the mental (MCS) summary score (PCS women 48.2, men 49.8; MCS women 50.5, men 52.3). With increasing age, physical summary scores decrease in men and women (e.g. in women PCS decreases from 50.9 in the age group 18–39 years, to 47.9 in the age group 40–64 years, and 44.7 in the age group 65 years and above). The mental summary score does not change significantly with age. The means of SF-8 summary scores increased with the social class of the individual in all age categories. Back pain and chronic back pain have a major negative influence on all components of quality of life. Factors negatively associated with health related quality of life include self reported chronic diseases and limitations of usual activities because of health problems.

**Conclusions:** Health related quality of life measured with the SF-8 is strongly associated with age, sociodemographic factors, and morbidity. The ascertained associations are similar to findings from studies using the SF-36. These results suggest that the SF-8 is a useful tool for measuring quality of life at a population level.

#### 054 RISK OF SQUAMOUS CELL SKIN CANCER AND CHEMICALS EXPOSURE IN WORKING SWEDISH WOMEN

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**Introduction:** Basal and squamous cell skin carcinoma (SCC) are the most common malignant neoplasm in white populations. The Swedish Cancer Environment Registry (CER) is one of the few cancer registries recording squamous cell skin carcinoma (SCC).

**Objective:** To estimate the risk of SCC by anatomical site related to occupational exposure to chemicals in Swedish women.

**Methods:** The base population of this historical cohort included all Swedish women recorded in the 1970 census as gainfully employed and who were also registered in 1960 census. Information about SCC incidence for the period 1971–1989 was obtained from the Swedish CER. Exposure to 13 chemicals was assessed by linking every combination of occupation and industry to a Swedish job exposure matrix (JEM), which classified them as probable, possible, and non-exposed, although when the analysis was made probable and possible categories were grouped, owing to the small number of subjects. The country of Sweden was divided into two geographical regions based on latitude (north and south) as a proxy for sunlight exposure. Relative risks (RRs) adjusted by age, period, geographical area, town size, and occupational sector were obtained, fitting log linear Poisson models for each location. Risk estimators were also computed in every latitude category.

**Results:** After JEM linkage, 1051 SCC cases were available for the analysis. An increased risk was observed for women with occupational exposure to solvents for all locations (relative risk (RR) 1.33, 95% confidence interval (CI) 0.93 to 1.90) and for upper extremities (RR

2.51, 95% CI 1.21 to 5.19). A significant risk excess was found for thoracic SCC in workers exposed to oil mixtures (RR 2.70, 95% CI 1.18 to 6.17) and for upper extremities SCC in workers exposed to pesticides (RR 4.15, 95% CI 1.27 to 13.51); however, this last estimate was based on only three exposed cases. Our study failed to detect any significant association between these chemicals and head/neck and lower extremities SCC. No association was detected with arsenic or polycyclic aromatic hydrocarbons for any SCC location. For all the aforementioned exposures, RRs were greater in the south area.

**Conclusions:** Our study supports the previously reported increased risk of SCC for oil mixtures only for thoracic location. Occupational exposure to solvents and pesticides could be linked to an increased risk of SCC. The inclusion of SCC in cancer registries cannot be underestimated, as it enables occupational epidemiologist to make this kind of studies.

#### 055 EPIDEMIOLOGICAL FEATURES OF THE MENINGOCOCCAL SEPSIS IN KOSOVO

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**Introduction:** Meningococcal sepsis is a severe systematic disease caused by *Neisseria meningitidis*. Even though there are various ways of treatment, still the disease is associated with high death rate. Pathogenic mechanisms that determine the disease and the fate of sick persons are objects of continuous scientific research.

**Objective:** To describe the epidemiological features of the meningococcal sepsis in Kosova during the period 1990–2001.

**Methods:** A descriptive method for the retrospective epidemiological study was used.

**Results:** A total of 147 cases were registered during this period; 87 (59.18%) were males and 60 (40.82%) females. The age group up to 2 years old was represented by 65 cases (44.22%). The average age of all cases was 4.76 years (range 0 to 33). The highest number of patients was recorded during January, February, and March, a total of 66 patients (44.9%). Males dominated among cases: 119 (80.96%). From 147 cases, 130 (88.40%) presented with the clinical form of the sepsis with meningitis, while 17 (11.60%) did not develop it. The overall lethality from meningococcal sepsis among our patients was 8.16%. The highest level of lethality was recorded among cases with meningococcal sepsis without meningitis (17.65%) compared with the 6.92% that was the lethality level for cases with meningococcal sepsis with meningitis. Death occurred on the first day of hospitalisation. The medium length of hospitalisation was 16 days (1–50 days). Aetiology was determined with blood and cerebrospinal fluid culture, direct microscopic examination of the CSF, and latex agglutination in 73 (49.65%) cases. The most suitable test to determine the aetiology was the latex agglutination, which gave positive results in 75.0% of the examined patients.

#### 056 CONTRACEPTION: REPRODUCTIVE BEHAVIOUR OF WOMEN USERS OF PUBLIC HEALTH SERVICES IN THE CITY OF NATAL-RN, BRAZIL

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**Introduction:** The objective of this work is to analyse the reproductive behaviour of women users of the Public Health Service (SUS), residents in different zones of the city of Natal-RN, Brazil.

**Methods:** The data had been collected through a structuralised questionnaire applied to women of fertile age (15 to 49 years of age) that were seeking attendance at some of the selected public health services, during the months of January–March 2004. The services had been chosen, intentionally, in the four zones of the city that are known to present clear socioeconomic differences. Traditional exploratory data methods of analysis were applied to the data.

**Results:** The final sample had 245 women, of which 73.5% were less than 34 years of age and 18% were pregnant. The highest pregnancy rates were found in the most populous zones (north and west, 25% and 36%, respectively) where fecundity is highest and the socioeconomic patterns are lower. Among the pregnant women, 70% had not planned the pregnancy and had reported the fact of not using any contraceptive method (45%) or using it in an irregular manner (39%) as the main reason for becoming pregnant. Still with relation to the pregnant women, 54.5% were less than 24 years of age, with 27.3% of adolescents (less than 19 years of age) and the majority of them (73%) expressed the desire to deliver vaginally, a fact that confirms the results from previous research



in Brazil, which included the city of Natal.<sup>1</sup> When asked about their plans for the future, 63% of the women did not want to have more children and, for 31% of them, due to tube connection (TC). Regarding TC, from the sample of interviewed women, 24% already had had a TC carried out. Among the women who did not want to have more children (even those able to do so), 25% expressed a wish for having had a TC performed long before. Among those who had had a TC, 74% had it before 30 years of age and at that time had had three children or fewer. With regard to satisfaction with the TC, 72% of the women said they were completely satisfied, 7% were partially satisfied, and 17% regretted it; among these latter about 70% were less than 30 years of age at the time of the operation.

**Conclusions:** These results confirm the current reproductive behaviour with an increasing trend of reduction of the number of children for women and the historical use of radical contraceptive methods such as the TC. It is known, however, that this form of contraception, widely adopted all over the country in Brazil, demonstrates the omission of efficient family planning in public health sectors, which must be equally accessible to all women.

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### 057 CUTANEOUS MALIGNANT MELANOMA SURVIVAL: HOW MANY YEARS OF LIFE CAN EARLY DIAGNOSIS SAVE?

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**Introduction:** Unlike many cancers, melanoma occurs in a younger population. This places melanoma second among adult onset cancers in years of potential life lost.

**Objective:** To evaluate 5 year survival and to investigate the association between melanoma mortality and clinical and histological features.

**Methods:** We conducted a 5 year cohort study among 1020 patients from the same geographic area (Rome) with a single primary cutaneous melanoma diagnosed between January 1995 and December 2000. All data were merged from the clinic based melanoma registry of IDI. Survival probability was determined by Kaplan-Meier estimates, and prognostic factors were evaluated by multivariate analysis (Cox proportional hazards model).

**Results:** Survival decreased with increasing age (p for trend <0.049) and Breslow thickness (p for trend <0.0001). In the univariate analysis, the most powerful predictors after thickness were mitotic rate (high versus low: relative risk (RR) 7.5; 95% confidence interval (CI) 2.5 to 22.95), presence of ulceration (RR 2.79; 95% CI 1.28 to 6.08), and nodular versus superficial spreading type of melanoma (RR 5.5; 95% CI 2.7 to 10.9). However, once tumour thickness was controlled for in the multivariate Cox model, Breslow thickness was the only independent prognostic factor for melanoma mortality. The risk of mortality increased with increasing tumour thickness 0.76–1.49 mm (RR 2.67; 95% CI 0.63 to 11.40); 1.50–4.0 mm (RR 6.38; 95% CI 1.75 to 23.19); >4.0 mm (RR 34.63; 95% CI 8.23 to 145.75) (p<0.0001). The years of life lost for Breslow categories ≤0.75 mm, 0.76–1.49 mm, 1.50–4.0 mm, >4.0 mm were 65, 4, 153.6, 274.3 and 317.6, respectively.

**Conclusion:** This study shows the high importance of melanoma prevention and illustrates how many years of lives could be saved by early diagnosis.

### 058 SOCIOECONOMIC DETERMINANTS OF CAESAREAN SECTION RATES IN SOUTH BRAZIL

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**Introduction:** The high rates of caesarean section in Brazil have been acknowledged as a public health problem since 1960, when policies directed at lowering the rates were devised, reflecting a growing concern of the government with the issue. In 2000, in south Brazil, where rates are remarkably high, the government proposed an agreement with the public maternity units with the main goal of reducing rates of Caesarean section to a maximum of 25%, to be achieved by 2006.

**Objective:** To investigate trends in caesarean section rates in Santa Catarina, and to correlate these with social, economic, and reproductive indicators.

**Methods:** A descriptive and ecological study was conducted using two sources of national data, an statistical report including social and economic indicators for the region, and a database comprising all institutional births in Brazil (SINASC) from 1995 to 2000.

**Results:** Figures for the whole state (about 40%) depicts one of the highest rates in the country, well above the national rate of 32% for public maternity units. Additionally, important regional variations in rates of caesarean section were found when comparing different regions and counties within the state. The indicator measuring level of social development (IDS) presented the best correlation, followed by average wage per capita. Results also showed that those cities with larger populations had up to three times the risk of caesarean compared with the less populated cities, after controlling for the other factors in the multivariate model. Among the demographic and reproductive indicators, size of the population, literacy, and number of prenatal consultations were shown to be correlated with caesarean rates.

**Conclusions:** Apart from institutional factors, social and economic regional inequalities are correlated with differences in the use of caesarean section and should be taken into account when devising strategies to face the problem.

### 059 PERINATAL MORBIDITY ASSOCIATED WITH CAESAREAN SECTIONS IN SOUTH BRAZIL

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**Introduction:** Medically indicated caesarean sections are those directed to safeguard the mothers' and children's health. According to the World Health Organization, rates in excess of 15% imply proportions of deliveries by caesarean above those that are medically indicated. Brazil presents one of the highest rates of caesarean section in the world. Caesarean sections without definite medical indications can lead both to higher maternal mortality and post-partum maternal morbidity, and higher incidence of prematurity. The evidence shows that the incidence of respiratory distress syndrome is lower among babies whose mothers are allowed to go into labour prior to the caesarean than among those whose mothers are operated before labour starts.

**Objective:** To investigate factors associated with perinatal complications when comparing newborns whose mothers had a vaginal delivery and those delivered by caesarean section.

**Methods:** A cross sectional study based on data from the main public maternity in Florianópolis, South Brazil, concerning 1405 consecutive deliveries obtained information relative to Apgar Score, birthweight, gestational age, and other maternal and fetal variables. Logistic regression was used to investigate the independent effect of type of delivery on child outcomes.

**Results:** Proportions of low Apgar Score were higher among babies delivered by caesarean section (11%) compared with those whose mothers had a vaginal delivery (9.5%). Rates of complications were significantly higher among those delivered by caesarean than among those whose mothers had vaginal deliveries (11% versus 5%; p<0.01). Prematurity among newborns, both with and without respiratory distress syndrome, was significantly higher for those mothers having caesareans (p<0.001).

**Conclusions:** Results from other studies suggest that respiratory distress is higher among primary and repeat caesareans. Results from this study point in the same direction. The limited evidence available does not suggest that increasing the practice of caesareans can reduce infant morbidity and, therefore, this practice should be discouraged when not aimed at the benefit of mother and child.

### 060 RISK FACTORS AND PREVENTION OF BLOOD BORNE INFECTIONS IN SURGEONS AND SURGICAL WARD NURSES IN CITY AND COUNTY HOSPITALS OF POMERANIA, POLAND

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**Goal:** To improve prevention of blood borne infections in surgical staff in hospitals of Pomerania.

**Objectives:** To assess and compare risk factors for blood borne infections between surgeons and surgical ward/operating room/emergency room nurses including: (a) frequency of exposure to puncture

injuries and mucous membrane contact; (b) frequency of exposure to HIV infected patients' completeness of reporting for exposure to equipment associated with puncture injuries, including hypodermic needles, suture needles, and scalpels; and (c) completeness of protection by immunisation coverage for hepatitis B.

**Methods:** This was an analytical cross sectional survey, comprising 132 surgeons and 382 nurses from operating rooms, wards, and emergency rooms. An anonymous, self administered questionnaire (prepared by A. Lowenfels, New York Medical College, USA), verified for sensitivity and specificity, was distributed between May 2001 and February 2003. The sampling was a multistage random sample, with four inner city and four county hospitals selected. Between group differences were determined using the  $\chi^2$  test.

**Results:** Responding surgeons ranged in age (distribution not normal) from 26 to 73 (median 39) years, and most were men (80%). The median (range) age of the nurses 36 (20 to 58) years. The vast majority of surgeons (98%) and almost one half of nurses (46%) reported at least one puncture injury in the preceding year (between group differences for doctors and nurses statistically significant:  $p < 0.001$ ). Surgeons sustained injuries caused mainly (80%) by suture needles; among nurses such injuries were reported by 10% of respondents ( $p < 0.001$ ). Nurses' injuries were significantly more likely to be caused by hypodermic needles (72% incidents among nurses versus 7% among doctors;  $p < 0.001$ ). Moreover, 84% of surgeons and only 18% of nurses sustained contacts via mucous membrane ( $p < 0.001$ ). The under-reporting rate was significantly higher among surgeons (99%) than nurses (86%);  $p < 0.001$ . More nurses (88%) than doctors (78%) had been immunised against hepatitis B ( $p < 0.01$ ); fewer nurses (3%) than doctors (10%) had been infected with hepatitis B ( $p < 0.002$ ). Significantly more doctors (55%) than nurses (30%) experienced contacts with HIV infected patients ( $p < 0.001$ ). Regular use of surgical gloves reported by surgeons and nurses was 99% and 89% respectively ( $p < 0.001$ ).

**Conclusions:** The evident risk factors for occupational blood borne infections for surgeons are both very frequent skin injuries sustained by suture needles and contacts via mucous membranes. For nurses, they are injuries caused by hypodermic needles and the lack of regular use of surgical gloves. Additional factors, magnifying the occupational risk for surgeons and nurses are: (a) the extremely high under-reporting rate, which diminishes the chance of potentially beneficial prophylactic treatment, and (b) poor immunisation coverage for hepatitis B. These data emphasise the importance of increased efforts toward improving prevention strategies in pre-event, event, and post-event phases, including personal and equipment factors, while having regard to the differences in occupational risk of infection between doctors and nurses from surgical wards.

### 061 ENERGY EXPENDITURE AND DETERMINANTS OF PHYSICAL ACTIVITY IN A PORTUGUESE URBAN POPULATION

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**Introduction:** Undertaking physical activity and maintaining appropriate energy expenditure are important to health and wellbeing. Throughout each day people spend varying amounts of energy in a wide range of activities. Little is known about energy expenditure patterns and their associations with demographic and social factors in Portuguese adults.

**Objective:** To identify patterns of energy expenditure and determinants of high physical activity through a cross-sectional study.

**Methods:** A sample of 2051 adults (1255 women, 796 men) in Portugal was interviewed using a standard questionnaire, comprising of social, behavioural and clinical information. Time spent in a variety of activities per day, including work, household chores, sports, sedentary leisure time, and sleep, were self reported. Energy expenditure was estimated by multiplying the related metabolic equivalent (MET) to the self report time spent in each activity (min/day). Mean scores and 95% confidence intervals (CI) were calculated for energy expenditure per activity, and the magnitude of associations, between energy expenditure and the demographic and social variables, were computed as age adjusted odds ratios using logistic regression. All analyses were conducted using Stata 7.0.

**Results:** This study highlights that sports activities contribute little to the overall energy expenditure of this urban population (mean % (95% CI) 2.5 (2.2 to 2.9)) women; 4.2 (3.7 to 4.8) men). A high percentage of energy expenditure is seen in work (22.3 (21.0 to 23.6) women; 32.6 (30.7 to 34.5) men) and performing domestic work by women (24.6 (23.7 to 25.5)). The equally high mean percentages of energy

expenditure through sleep and leisure activities emphasise the primarily sedentary nature of the population. In the analysis of the associations between energy expenditure and demographic and social factors, it was recorded that less schooling, being a manual worker, and being 30–50 years old are associated with a higher energy expenditure at work in both women and men. In household activities, women who are not married and who have a higher education level are less likely to spend a high proportion of energy in this activity compared with married women and those with lower education levels respectively. Additionally, those who are retired or unemployed reported that they spend a high proportion of time undertaking domestic activities. The amount of energy expenditure in sports was also related to education level, occupation, and obesity, with those with higher education, office work, and a normal body mass index range more likely to take part in sporting activities. The amount of energy spent in leisure time was significantly higher in those who are unemployed or retired and those older than 60 years, as well as in women who are not married.

**Conclusion:** This study has identified certain groups that could be targeted through behavioural interventions to increase physical activity and energy expenditure and improve health and wellbeing.

### 062 EXCESS MORTALITY IN THE MADRID AUTONOMOUS REGION DURING THE 2003 HEATWAVE

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**Introduction:** During the summer of 2003, the Madrid Autonomous Region (MAR), like many other European regions, underwent exposure to extremely high ambient temperatures.

**Objective:** To examine the impact of this heatwave on mortality during the summer of 2003 in the MAR, and compare its magnitude against preceding heatwaves that occurred in the 1990s.

**Methods:** Mortality data were drawn from the MAR mortality registry for 1989–2000 and the burial registry for 2000–2003. Maximum daily temperatures were taken from readings recorded at the Barajas meteorological observatory. The daily mortality of both series was then modelled separately using Poisson regression models, with adjustment for linear and quadratic trend and sinusoidal terms of up to the sixth order. Days with unusually high mortality were defined as those surpassing the upper interval of the forecast, based on twice the standard error of expected mortality.

**Results:** A clustering of unusually high daily mortality was detected in the months of July and August 1991 and 1995. This excess was in turn associated with maximum temperatures of above 36.5°C. During 2003, excess mortality was observed during the first fortnight in August, coinciding with 14 days of temperatures of above 36.5°C. The increase in mortality during the first fortnight in August 2003 over the same period in 2000–2002, duly adjusted for trend and seasonality, was 25.0% (95% confidence interval (CI): 18.2 to 32.1). When the July and August mortality for these two periods was compared, excess mortality fell to 2.7% (−0.8 to 6.2). This increase was concentrated in persons over the age of 75 years and in women, who registered an excess mortality double that of men. The impact of the 2003 heatwave, although similar to that observed for 1991, was less than that for 1995, a year in which the heatwave also attained comparably high temperatures.

**Conclusions:** Analysis of the temperature and daily mortality series suggests that maintained exposure at high temperatures during summer leads to major increases in mortality. This phenomenon is not infrequent in our region, and thought should therefore be given to drawing up an intervention programme targeted specifically at protecting the most vulnerable segment of the population.

### 063 HEALTH INEQUALITIES: MORTALITY IN VALLECAS

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**Introduction:** Mortality statistics are one of the major sources of information in the evaluation of the state of health of the population.

**Objective:** To analyse the pathologies causing excess mortality in Vallecas with respect to the community of Madrid.

**Methods:** Cumulative deaths from 1994 to 1998 were analysed, calculating the gross and specific mortality rates by cause and sex, and

potential years of life lost (PYLL). The results were compared with those of the community as a whole, by direct standardisation, and using the 1990 European population as a standard. The comparative mortality index and the PYLL rate were calculated. The standardised rates were compared using statistical significance testing for rate difference ( $p < 0.05$ ).

**Results:** The main causes of death in Vallecas are circulatory diseases, tumours, and respiratory diseases. AIDS is the leading cause among people aged under 45 years. There is an excess mortality, both general and premature (PYLL), mainly in men. The diseases causing the greatest excess mortality are chronic obstructive pulmonary disease, HIV/AIDS, stomach cancer, and pneumonia.

**Conclusions:** The causes of death in the community of Madrid coincide with those of neighbouring areas, and the impact of AIDS on young people is notable. The excess mortality detected is yet another indicator of the less favoured situation of Vallecas with respect to the community.

#### 064 RAPID FIELD ASSESSMENT OF SEXUALLY TRANSMITTED INFECTIONS IN KOSOVA

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**Objective:** To present the epidemiological situation regarding RTI/STI, HIV, and AIDS in Kosova.

**Methods:** A qualitative method for rapid field assessment was applied.

**Results:** The healthcare system in Kosova is administered and managed at the central level by the Ministry of Health. The composition of a separate programme for RTI/STIs was prepared during the workshop held in March 2003. Epidemiology, surveillance, and sociomedical and laboratory research (as well as other services) were enabled through the Kosova's National Institute for Public Health. This system also includes reports on STIs, but these infections in the respective forms are reported only as symptoms, usually as symptoms of genital ulcers and urethral secretions. The team during their assessment has also found that no such form, even a symptomatic one, exists, and that none of the doctors interviewed in private and public health institutions had reporting papers (forms). In a significantly large number of families, sexual education is still a taboo topic. Sexual education is not taught as a separate course within the academic curriculum in schools. Medicine, the Women's Wellness Centre, provides gynaecological and counselling services. In some institutions, there is lack of infection prevention practices. In public institutions, abortions are performed based on indications and with the wish of patients (in the first 3 months of the pregnancy). In public pharmacies, drugs for RTI/STIs can be procured with a prescription or bought without a doctor's prescription. Men have very little knowledge about the consequences of STIs to their health as well as that of women. Women generally visit gynaecologists for their problems, while men seek help and counselling from a urologist or infectologist. Most interviewees believe that women become sexually active earlier than men, 15–16 years old and 16–18 years old respectively. Younger people mainly use condoms for contraception, while older ones use condoms as a means of protection from STIs.

**Conclusion:** Counselling services on reproductive health within youth centres and tests for STIs should be offered. We suggest the composition of an RTI/STI protocol, which includes a definition of the case, method of diagnosis and training, and which would be obligatory. Further work should include health education; pilot studies; periodic research on the improvement of the quality of surveillance of infections with RTI/STI; dissemination and assessment of the surveillance criteria of STIs; on RTI/STI.

#### 065 OCCUPATION, ELECTROMAGNETIC FIELD EXPOSURE, AND RISK OF LEUKAEMIA

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**Introduction:** Occupational exposures may be related to leukaemia.

**Objective:** To estimate occupational specific risks of acute myeloid leukaemia, chronic myeloid leukaemia, and chronic lymphocytic

leukaemia among men, and the influence of occupational exposure to extremely low frequency electromagnetic fields (ELFMF).

**Methods:** A dataset linking cancer diagnoses from the Swedish national cancer register to occupational and demographical data obtained in the 1970 census was used to fit log linear Poisson models, in order to obtain relative risks adjusted by age, period and geographical area. Risk estimators per occupation were also computed for workers reporting the same occupation in 1960 and 1970. Exposure to ELFMF was assessed by linking occupations to a job exposure matrix comprising estimates of magnetic field exposures for 100 most common jobs among Swedish men according to the census of 1990. Four exposure groups were formed with cut off points at the 33rd, 66th and 90th centiles, with the lowest category as reference. Log linear Poisson models were fitted replacing occupation by ELFMF exposure group for each type of leukaemia.

**Results:** During follow up a total of 1682 cases of acute myeloid leukaemia, 665 cases of chronic myeloid leukaemia, and 2270 cases of chronic lymphocytic leukaemia were reported in men. Occupations with statistically significant relative risk (RR) greater than 1.50 and having at least five cases involved in them were: (a) plastic products workers (RR 1.86), and dockers and freight handlers (RR 1.72), for acute myeloid leukaemia; (b) radio and television assemblers and repairmen (RR 2.22), industrial spray painters (RR 3.47), and packers (RR 3.08), for chronic myeloid leukaemia; and (c) teachers of music, arts, or crafts (RR 1.88), working proprietors, wholesale tradespeople (RR 2.07), livestock breeders (RR 4.06), miners (RR 2.00), railway linesmen (RR 2.55), precision toolmakers (RR 1.89), and construction machine operators (RR 1.55), for chronic lymphocytic leukaemia. These results were confirmed when RRs were computed only for those reporting the same occupation in both the 1970 and 1960 censuses, and other significant risks were revealed for acute myeloid leukaemia among chemists (RR 3.96), for chronic myeloid leukaemia among class teachers (RR 2.61) and line workers (RR 3.22), and for chronic lymphocytic leukaemia among electrical fitters and wiremen (RR 1.54). Although we found increased risk of chronic myeloid leukaemia and chronic lymphocytic leukaemia in some of the occupations associated with ELFMF exposure, no increased risk of any of the three histological types of leukaemia studied was observed in those groups with greater exposure according to the ELFMF job exposure matrix.

**Conclusions:** Occupations associated with an excess of risk are different for each histological type of leukaemia, suggesting different aetiology and the need to consider the histological type in epidemiological studies. Further studies are required in order to investigate a possible joint effect of ELFMF and occupational exposure to chemical substances.

#### 066 CAUSES OF HOSPITALISATION IN ELDERLY PATIENTS IN POLAND, 2001

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**Introduction:** As the process of ageing of Polish population accelerates, chronic diseases become an even more important health and economic problem. The needs of an ageing population, as far as medical assistance is concerned, have a strong impact on the scale and structure of hospitalisation.

**Objective:** The objective is to identify the main reasons for hospitalisation of people aged over 65 years in Poland.

**Material and methods:** The source of data was the Hospital Morbidity Study database of the Department of Medical Statistics at the National Institute of Hygiene, Warsaw. All hospitalised cases (100%) in 2001 in four regions of Poland are described, and the hospitalisation rates by causes analysed.

**Results:** In four selected regions of Poland 1 470 664 patients were hospitalised in 2001. Elderly patients constituted 29% of that group (418 687 subjects). Elderly people were admitted to hospitals more frequently than general population due to almost all causes. The most significant differences were observed in the following groups of diseases: cerebrovascular diseases (CVD) (the rate is five times that of the general rate for this cause), diseases of the circulatory system, ischaemic heart disease (IHD), chronic obstructive pulmonary disease (COPD), malignant neoplasm of digestive organs and peritoneum, diabetes mellitus (DM), (all four times higher), and neoplasms (three times higher). Elderly male patients were admitted to hospitals more often than female patients at the same age, and elderly patients living in urban areas were hospitalised more often than those living in rural areas. Men (65 years+) were hospitalised more frequently due to malignant neoplasms of the genitourinary organs, cerebrovascular diseases (the rate of both is six times that of the general rate for this cause in males), malignant

neoplasm of the digestive organs and peritoneum, COPD, and diseases of the circulatory system (all five times higher). Elderly male patients were rarely admitted to hospitals due to injuries, poisonings, and congenital anomalies. Hospitalisation of elderly female patients was mainly attributed to cerebrovascular diseases (the rate is five times that of the general rate for this cause), IHD, CVD, DM, and malignant neoplasms of digestive organs and peritoneum (all four times higher). Women (65 years+) were hospitalised rarely due to congenital anomalies, benign neoplasm, or diseases of the genitourinary system.

**Conclusions:** Elderly patients suffering from chronic diseases were hospitalised more often than the general population. Elderly males living in urban areas were admitted to hospitals more frequently than the general population and females. The main causes of hospitalisation in a case of males were neoplastic diseases, whereas females were hospitalised mainly due to CVD.

#### 067 PROBABILISTIC LINKAGE BETWEEN MEDICATION AND SURVEILLANCE DATABASES: AN APPLICATION IN AIDS HOSPITAL SURVEILLANCE

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**Introduction:** This study analyses the potential advantage of the integrated use of a Medication Information System and the Brazilian AIDS Surveillance Information System for the AIDS surveillance in a teaching hospital.

**Objective:** To evaluate the completeness of the surveillance database with regards to patients using anti-retroviral therapy, as well as the timeliness of case reports, both in the hospital surveillance department and in the county health department.

**Methods:** The study was carried out in a teaching hospital located in Rio de Janeiro city. The hospital medication database (1463 records) was linked to two different AIDS surveillance databases: the hospital surveillance department database (674 records) and the county health department database (1956 records). The databases were linked applying the software ReLink II, which implements the probabilistic linkage methodology.

**Results:** Of the 1463 patients recorded in the medication database, 1393 (95.2%) were identified in at least one of the surveillance databases. Among the AIDS patients, the median delay from time of diagnosis to case report to the hospital surveillance department and to county health department were, respectively, 14 and 218 days. In addition, 16.5% (182/1106) of the AIDS cases reported to the hospital surveillance department were not found in the county health department database during the period analysed.

**Conclusions:** In spite of the AIDS surveillance information system reaching near completeness, these results suggest that in order to improve the timeliness of the AIDS surveillance system it is necessary to optimise the process of transference of cases from the hospital surveillance department to the county health department.

#### 068 CIRCULATORY DEATH RATE AREAS AND INCOME POPULATION CHARACTERISTICS IN AN URBAN AREA OF MEDIUM SIZE IN A SOUTHWEST CITY OF BRAZIL: THE CASE OF PRESIDENTE PRUDENTE, SP, BRAZIL, 2000-2002

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**Introduction:** Mortality caused by circulatory diseases constituted the leading cause or death in Presidente Prudente, SP, Brazil between the years 2000 and 2002. The relationship of those deaths with commonly related ambient factors, lifestyles, and some socioeconomic variables is an indicator of higher risk adult groups, and can be used to guide public health policies to control inadequate life conditions.

**Objective:** To identify urban areas of residence for risk groups and to test relationships between circulatory mortality rates to income and other socioeconomic indicators.

**Methods:** Routine data of official mortality information system were used, including cases residents in the urban area that had recently been classified (chapter IX (10-ICD) excluding 185-199), occurred between January 2000 and December 2002. Rates were directly standardised and studied according to areas of residence (group of census tracts). Statistical modelling was made with standardised death rates and several economic synthetic variables of each area. The software used

was MapInfo® (version 6.2), and WinBUGS® (version 1.4) for statistical modelling.

**Results:** During the period studied, 274 deaths classified as circulatory diseases occurred in people with ages varying between 18 and 97 years. Standardised rates varied from 0.00 to 3.04 deaths/1000 persons/year. The upper rates occurred in areas of lower socioeconomic conditions named "exclusion areas" with predominance of habitations for low income persons. The lower rates occurred in better socioeconomic residential areas. The statistical correlation values of those rates were not considered strong; however, spatially the indicator map layers were almost superimposed.

**Conclusion:** The burden of circulatory diseases is increasingly common, particularly in less developed areas. The study of spatial distribution of its death rates may be useful for identify priorities to improve allocation of health resources and facilities for prevention, treatment, and collaboration in public health policies for non-transmissible chronic diseases.

#### 069 A LOCAL APPROACH TOWARDS THE ELIMINATION OF TUBERCULOSIS IN A RURAL MUNICIPALITY OF CUBA, 1995-2001

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**Introduction:** The municipality of Majibacoa had the highest tuberculosis (TB) incidence in Las Tunas up to 1995. A local intervention to reduce the incidence was implemented. This required additional efforts for health services and the involvement of other agencies in decision making towards the achievement of this goal.

**Objectives:** To assess the feasibility and effectiveness of an integral intervention package in communities assisted by family doctors.

**Methods:** An intervention study based on an investigation-action modality was conducted. A questionnaire about the tuberculosis programme was given to family doctors and nurses with an immediate general debate of each question; in addition, a complete package of informative educational techniques was provided to administrative, political, and community leaders of the municipality in order to raise the awareness of decisionmakers. The incidence of tuberculosis was measured before (1995-1997) and after the intervention (1997-2001) in the municipality under study, Majibacoa. In addition, two other rural municipalities with similar characteristics in which no intervention was performed were used as controls.

**Results:** In the year 1995, the Majibacoa and the two control municipalities presented similar rates of incidence (13.1, 11, and 9.1/100 000 respectively). In the two subsequent years the rates in Majibacoa had increased, reaching 23.1 in 1997, while the control municipalities stayed stable. After the intervention a gradual decrease in incidence was observed in Majibacoa, so at the end of the period (2001) a rate of 2.5/100 000 inhabitants was reported; the control municipalities did not register marked changes in incidence.

**Conclusion:** The reduction in incidence is probably related to the integrated intervention process that included improvements in TB surveillance and the living conditions of the population.

#### 070 SOCIAL NETWORK AND SELF REPORTED HEALTH CONDITION AMONG PUBLIC OFFICERS OF A UNIVERSITY: PRÓ-SAÚDE STUDY RESULTS

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**Introduction:** An individual's social network (group of people with which they maintains social contact or relationship) has been associated with health outcomes. Knowledge regarding the relationship between social network and self reported health condition, which is strongly connected to mortality risks, is scarce.

**Objective:** To investigate gender differences in the association between social network and self reported health condition.

**Methods:** Data of stage 1 of a study (the Pró-Saúde Study) was analysed on a sectional basis, comprehending 4030 public officers of a university in Rio de Janeiro. Information on social network (number of

relatives and close friends, participation in social activities, marital status, and living alone or not) and on self reported health condition (excellent, good, fair, poor) was collected through a multidimensional questionnaire. Logistic regression was used for multivariate analysis.

**Results:** Among men, adjusting for age and academic background, mentioning three or more close friends increased by 76% (odds ratio (OR) 1.76; 95% confidence interval (CI) 1.17 to 2.65) the chances of considering their own health condition as excellent or good compared with those who reported not having any close friends. Among those who reported taking part in artistic or sports activities, chances were 85% higher (OR 1.85; 95% CI 1.35 to 2.53) than those who did not. Among women, higher chances of considering their health condition as excellent or good were observed among those who reported three or more close relatives (OR 1.82; 95% CI 1.26 to 2.62) compared with those who reported none.

**Conclusions:** Self reported health condition varied significantly according to the social network, showing different associations between social relationship characteristics, gender, and health condition.

#### 071 REFERRED MORBIDITY OF THE 1 MONTH TO 19 YEAR OLD POPULATION LIVING IN A NEIGHBORHOOD OF SÃO PAULO CITY, BRAZIL

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**Introduction:** In 2000, the municipality of São Paulo launched the Family Health Programme to redirect their focus towards healthcare, particularly primary healthcare. The Family Health Programme uses teams consisting of one doctor, three nurses, and six community health agents, who are responsible for 600–1000 families. The team is linked to the Health System as a basic unit of health. During the programme, only the community agents utilise an information system on primary care. The community agents look after the populations' health and living conditions, with about 150 families per agent. The community agents' information collection, updated monthly, is the main source of data for the basic unit of health.

**Objective:** To describe the referred morbidity of 1 month to 19 year olds living in a neighbourhood of São Paulo city, São Remo. Three teams from the Family Health Programme, linked to the University of São Paulo Medicine School Health Centre, assisted the community.

**Methods:** Community agents collected data through interviews with 1898 families, totalling 6934 people. The data from 2003 was entered into databases allowing the team to analyse and interpret the information.

**Results:** Of the 6934 interviewed people within the São Remo community, 3176 (45.8%) are adolescent children between 1 month and 19 years of age. In children under 12 years old, respiratory disease was the main cause of illness, with 42.5% being affected. Of the 42.5%, 19.6% of them had wheeze while breathing. Of children less than 12 years old, 9.2% needed hospital assistance due to respiratory problems throughout the year. The main causes of internment were pneumonia, asthma, and trauma. Among the adolescents, from 12–19 years old, the main cause of illness was trauma (23.5%). During the year, we observed that 5.9% of the girls were pregnant, 5.8% frequently consumed alcohol, and 19.2% smoked.

**Conclusion:** We observed a higher prevalence of respiratory illness within São Remo compared with the general population of same age living in São Paulo city. Respiratory diseases are partly a result of living conditions, high population density, and atmospheric pollution, which are prevalent factors within the community and explain the results. The data supported similar health factors between adolescents in the São Remo community and in São Paulo city. Social, environmental, and unemployment conditions significantly contribute to adolescent health problems. Health systems and the government must use the research findings to facilitate discussions, leading to the improvement of living conditions and health within the São Remo community.

#### 072 INVASIVE PNEUMOCOCCAL DISEASE IN AN AUTONOMOUS REGION OF MADRID, SPAIN, 1998–2001

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**Introduction:** *Streptococcus pneumoniae* is one of the most important causes of serious infections and death in the world. The availability of safe and effective pneumococcal vaccines makes it necessary to know the epidemiology of invasive pneumococcal disease.

**Objective:** To determine the incidence and characteristics of invasive pneumococcal disease in the region of Madrid, Spain.

**Methods:** A descriptive, observational and retrospective study using computerised hospital discharge data for the period 1998–2001 was conducted. All records with one of the following codes from the International Classification of Disease, Ninth Revision (ICD-9) in any of the two first discharge diagnosis were selected: 481 (pneumococcal pneumonia), 320.1 (pneumococcal meningitis), 038.2 (pneumococcal septicaemia), and 567.1 (pneumococcal peritonitis). To validate the accuracy of the clinical coding, all available medical records on the children, and a sample of the adults hospitalised in 2000, were examined; and information extracted using a structured questionnaire. In addition, the isolations of *S. pneumoniae* obtained from normally sterile sites in this year were also reviewed. Annual incidence rates per 100 000 inhabitants and case–fatality rates were studied.

**Results:** The annual incidence rate for the period was 45.99/100 000, and was much higher in persons >64 years (217.48) and in children <2 years old (98.25). The most frequent clinical manifestation was pneumonia (44.78/100 000), followed by meningitis (0.72), septicaemia (0.44), and peritonitis (0.05). The male to female rate was 1.5. The case–fatality rate was 10.5%, and was higher in those >64 years old (14.1%). Peritonitis showed the highest case–fatality rate (30%), followed by septicaemia (19.3%), meningitis (18.6%), and pneumonia (10.2%). A seasonal distribution was clear, with an accumulation of cases during the cold months (October to March). About 46% of the patients whose clinical records were reviewed had a laboratory confirmed diagnosis. In 73.6% of patients >64 years, risk factors for invasive pneumococcal disease were recorded. The mean duration of hospital stay was 13.7 days. No information about the serotypes causing pneumococcal disease or about pneumococcal vaccination was available in the clinical records.

**Conclusions:** The burden of invasive pneumococcal disease in our population was remarkable, especially in adults >64 years old. Although the incidence of this disease in the region of Madrid differs from that in other areas, the incidence of meningitis is similar to that reported by other studies. Seasonal variations and male to female ratio were in accordance with other authors. It is necessary to promote the utilisation of pneumococcal polysaccharide vaccine. This vaccine is recommended for selected groups with increased risk of pneumococcal disease, including the healthy elderly (over 64 years old). The knowledge of serotypes causing invasive disease is necessary to plan the use of conjugate pneumococcal vaccine in children. Continued surveillance is required in order to understand the evolution of invasive pneumococcal disease.

#### 073 RISK FACTORS FOR CHILDHOOD MORTALITY IN SUB-SAHARAN AFRICA: A COMPARISON OF DATA FROM A NATIONAL SURVEY AND INFORMATION FROM A DEMOGRAPHIC SURVEILLANCE SYSTEM

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**Introduction:** We evaluated the accuracy of data obtained from a demographic and health survey (DHS) with regard to risk factors for childhood mortality, using information gained from a demographic surveillance system (DSS).

**Methods:** We performed a survival analysis of childhood births based on birth histories available from the DHS survey of Burkina Faso 1998–99, which was planned to be representative for the whole country. All live births of the period 1994–98 (n=5953) were taken into account and a distinction was made between urban and rural areas. Similar information (on 12 905 children) was available from the DSS based in Nouna, western Burkina Faso, with a total population of about 60 000 inhabitants. We used all cause childhood mortality as the outcome variable (877 and 932 deaths reported respectively from the DHS and DSS).

**Results:** A simultaneous estimation of hazard rate ratios by a Cox regression model yielded similar estimates for the DHS and DSS data, in line with previous findings. Moreover, we estimated that the mothers of 1.5% of children of the DSS were deceased, thus under-reporting of child deaths in DHS surveys is not very high.

**Conclusions:** These findings demonstrate that, despite some limitations, DHS surveys are broadly comparable to the presumably more precise DSS data, and are therefore a valuable tool for assessing the importance of risk factors for childhood mortality in sub-Saharan Africa. This will help us to investigate new methods of estimating childhood mortality for a whole country, based on DSS data and knowledge about the distribution of the main risk factors.

### 074 ATTITUDES OF PHYSICIANS TOWARDS THE TREATMENT OF RISK FACTORS IN PATIENTS WITH CORONARY HEART DISEASE: HOW DO PHYSICIANS COMPLY WITH CLINICAL GUIDELINES?

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**Introduction:** Clinical guidelines emphasise the importance of risk factor control in secondary prevention of coronary heart disease (CHD). Studies such as the EuroAspire I and II surveys have repeatedly shown a persistent gap between these evidence based guidelines and clinical practice.

**Objective:** To identify physician related factors that may contribute to the observed gap in the region of Münster, Germany.

**Methods:** In 2002, a postal questionnaire with questions on knowledge and attitudes towards guidelines on secondary prevention of CHD was sent to all general practitioners (GPs) and interns working in private practice in the region of Münster (n=1023). The impact of socio-demographic factors, speciality, duration of medical practice, and characteristics of private practice on guideline knowledge and risk factor treatment were assessed using multivariate logistic regression.

**Results:** In total, 681 physicians (27.6% female) participated in the survey, yielding a response of 67%. A total of 58% of physicians claimed good or very good knowledge of the national German guidelines, whereas the respective European guidelines were much less known (15%). Multivariate analyses revealed that doctors in training, physicians participating in continuing medical education, and physicians who had been practising for less than 10 years were significantly more likely to know recent guidelines. Generally, physicians rated the treatment of risk factors such as smoking (94%), hypertension (90%), diabetes (84%), hypercholesterolaemia (71%), and overweight (69%) as very important. With regard to smoking cessation, the importance of behavioural therapy and nicotine replacement therapy was acknowledged as very important by only 17% and 5% of physicians, respectively. With regard to drug treatment, 36% of physicians reported starting antihypertensive drug treatment only at a systolic blood pressure of >150 mmHg, and 38% of physicians stated starting drug treatment for hypercholesterolemia only at total cholesterol values of  $\geq 250$  mg/dl or LDL cholesterol values of  $\geq 150$  mg/dl. In multivariate analyses, internists were more likely to start drug treatment for hypertension (odds ratio (OR) 1.4; 95% confidence interval (CI) 1.0 to 2.0) and hypercholesterolaemia (OR 1.4; 95% CI 1.0 to 2.1) at recommended thresholds, compared with general practitioners.

**Conclusions:** Our findings provide physician related explanations for the persisting gap between guidelines and treatment of risk factors in the study region. The need for vigorous treatment of risk factors, such as smoking, hypertension, and hypercholesterolaemia in patients with CHD was grossly underrated. Stronger emphasis has to be put on information dissemination and the continuous medical education of physicians to ensure higher standards of knowledge on recent developments in evidence based medicine.

### 075 PHYSICIANS' ATTITUDES AND ADVERSE DRUG REACTION REPORTING: A CASE-CONTROL STUDY IN PORTUGAL

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**Introduction:** Voluntary reporting of adverse drug reactions (ADR) is fundamental to medical drug safety surveillance. Substantial under-reporting exists and is the system's main limitation.

**Objective:** To identify knowledge and attitudes associated with ADR reporting.

**Methods:** This was a case-control study covering a population of National Health Service (NHS) medical practitioners in northern Portugal. The 88 cases comprised physicians who reported at least one ADR to the Northern Region Drug Surveillance Unit from 2000 to their date of enrolment in the study. The 771 controls were randomly selected from among the remaining physicians. All interviews were conducted using a self administered postal questionnaire. The knowledge and attitudes regarding spontaneous ADR reporting were based on Inman's "seven deadly sins". Agreement with the questions included in the questionnaire was measured using a horizontal, continuous visual analogue scale, 8 cm long, and unnumbered. We used logistic regression to determine the ADR reporting adjusted odds ratio (OR).

**Results:** A total of 397 questionnaires were received from 731 eligible practitioners (54.3%), 66 from cases (84.6%), and 331 from controls (50.7%). Physicians who worked in both hospital and ambulatory

settings were more likely to report ADR. The attitudes and opinions those were statistically significantly associated with a lower probability of reporting ADRs. Thus, a 1 unit decrease on the visual analogue scale (values from 0–10) decreased the probability of reporting by 12% due to complacency (the belief that really serious adverse drug reactions are well documented by the time a drug is marketed; OR 1.12,  $p < 0.02$ ) and ignorance (the belief that it is only necessary to report serious or unexpected ADRs; OR 1.12,  $p < 0.05$ ), and by 20% due to insecurity (the belief that it is nearly impossible to determine whether a drug is responsible for a particular adverse reaction; OR 1.20,  $p < 0.01$ ), diffidence (the belief that one would only report an adverse drug reaction if one were sure that it was related to the use of a particular drug; OR 1.19,  $p < 0.001$ ) and indifference (the belief that the one case an individual doctor might see could not contribute to medical knowledge; OR 1.19,  $p < 0.001$ ).

**Conclusion:** This study indicated that, where ADR reporting is concerned, there are many physicians' attitudes associated with under-reporting, and that a possible way of increasing notification might therefore lie in implementing educational strategies designed to decrease under-reporting.

### 076 SOCIAL INEQUALITY: RISK FOR HOSPITALISATION IN DIABETIC CHILDREN AND ADOLESCENTS

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**Introduction:** We wanted to investigate whether type 1 diabetic children and adolescents from lower social strata have a higher risk for an adverse course of disease, despite free access to healthcare in Germany? These are the first results of an ongoing multicentre study funded by the German Research Foundation.

**Methods:** Analyses are based on data from the DPV documentation programme in more than 100 German paediatric departments. All children and adolescents <20 years of age with diabetes onset in 2002, at least one in or outpatient contact, and documentation of social status were included (n=381, 53% male, mean (SD) age at onset 8.5 (4.4) years). We evaluated the association between social parameters (parental school education and professional training, family situation, nationality) and the risk for hospital admission as well as number of hospital days. Relative risks (RR) were estimated using random effect models, adjusting for age, sex, and clinic (cluster effect).

**Results:** Observation time was 0.1–1.2 years, during which 16% of the study subjects were hospitalised at least once, and 61% of hospital admissions were due to education. Incidence of hospital admissions was 0.4/person year, and hospital days were 3.2/person year. Hospitalisation and hospital days were higher in children from single parent families and from lower educated parents (<10 versus  $\geq 10$  years in school: RR 1.86, 95% confidence interval (CI) 1.07 to 3.24). However, children from non-German families had a lower rate of hospital admission and significantly fewer hospital days/person year compared with German subjects (odds ratio 0.57; 95% CI 0.36 to 0.90).

**Conclusions:** Hospitalisation was higher in subjects from lower educated parents and incomplete families, indicators for low social status. The lower hospitalisation risk of non-German families is striking. It may be explained by different patterns of healthcare seeking (lower participation in structured diabetes education in non-German families). Case numbers are low up to now, in particular for application of generalised multivariate models. The observations need to be confirmed and explained.

### 078 DESCRIPTION OF ABORTIONS IN WOMEN RESIDENTS OF THE COMMUNITY OF MADRID

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**Introduction:** Abortion was legalised in Spain with the passing of the 1985 Organic Law. Since then, the rate of voluntary interruption of pregnancies (VIPs) per 1000 women in fertile age in the community of Madrid has increased from 6.97 in 1991 to 13.91 in 2003.

**Objectives:** To describe the sociodemographic and cultural characteristics of the women who have undergone an abortion in 2003, and to present the time trend of VIPs carried out in the community of Madrid in the last 17 years.

**Methods:** Variables collected in the abortion notification form, concerning age, country, if the abortion is concerted or not (available

data from July), educational level, labour situation, incomes, number of children, number of previous abortions, weeks of pregnancy, and reason for abortion, were described and analysed.

**Results:** Of the 18 743 abortions in the community of Madrid, 82% were carried out on women who were resident in the area. Only 12.4% were concerted. The distribution of abortions for age groups was: 15 to 19 years: 10.2%; 20 to 24 years: 27.3%; 25 to 29 years: 26.2%; 30 to 34 years: 18.9%; 35 to 39 years: 12.3%; 40 to 44 years: 4.4%. 69.5% of women had secondary education, 1.9% did not have education, and 19% were university graduates. The percentage that had a remunerated job was 63.5%, 13.9% were unemployed, 10.1% were housewives, and 8.8% were students. The percentage with own income was 68.7%, and 16% of them did not have a partner. With regard to children and number of abortions, 51.8% of the women had had children previously to this abortion and 2.6% of them had more than four children, while 32.7% had had at least one abortion previously and 179 women had had more than four abortions, of which 50.8% were immigrant women, who undergo abortions more frequently. In 95.7%, cause of abortion was potential danger to the mother, and in 2.3% it was for fetal causes. Three abortions were due to violations, only accepted as a cause if a criminal charge existed.

**Conclusions:** Unintended pregnancies increase annually, and they are a problem for women and for public health. Of these abortions 82.6% are financed by the woman. Half of the abortions are carried out in immigrant women, although they represent less than 10% of the population of the community of Madrid. The causes of these differences underline the necessity of specific programmes for women with different social and cultural circumstances.

### 079 INCREASING INEQUALITIES IN THE DISTRIBUTION OF DENTAL CARIES IN BRAZIL

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**Introduction:** Inequalities and their relation to living conditions are now in the mainstream of public health thinking. Indices of caries prevalence and severity have been reported as having decreased in Brazil during the 1990s, on account of the fluoridation of water supplies, fluoride toothpaste, and a major reform in the health system. However, resembling the changing pattern of caries distribution in developed countries, the overall improvement of indices is not homogeneously spread, and the disorder continues to present at higher levels in deprived areas.

**Objective:** To document the process of concurrent decline and polarisation of dental caries distribution in Brazil.

**Methods:** This study comprises an ecological assessment of dental surveys performed in 1998 and 2002, with 9327 and 5722 12 year old schoolchildren respectively in 131 and 34 towns in the state of São Paulo, Brazil. The main outcome measures were the DMFT index and the Gini coefficient for caries distribution. We assessed the association of these outcomes with several town level indices of socioeconomic status, provision of dental services, and access to fluoridated tap water, in terms of the Pearson's *r* correlation coefficient, and OLS multivariate regression models.

**Results:** The DMFT index reduced from 3.72 in 1998 to 2.52 in 2002, while the Gini coefficient for the distribution of caries increased from 0.479 to 0.565. An improved profile of socioeconomic standing, preventive dental treatment, access to fluoridated tap water, and initiatives of dental education were significantly associated with reduced levels of caries distribution. However, as these conditions were non-homogeneously distributed in the population, they also associated with increasing levels of inequality in the distribution of dental caries. These observations indicate that there is room for an even higher decrease of caries levels, by targeting the expansion of dental services and access to fluoridated tap water to groups and areas with higher levels of needs.

**Conclusions:** An improved characterisation of the skewed distribution of dental caries demands the monitoring of inequality in the distribution of caries by statistics such as the Gini coefficient. This information may instruct programmes aimed at reducing levels of caries prevalence without reinforcing inequalities in the experience of the disease, a strategy that may contribute to devising socially appropriate programmes of oral health promotion.

### 080 ASSESSING THE BURDEN OF DISEASE AND INJURY IN SERBIA USING DISABILITY ADJUSTED LIFE YEARS

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**Introduction:** Health authorities seeking to make appropriate investments in healthcare require information about the nature of the burden of disease in their populations.

**Objective:** To assess the burden of disease and injury in the population of Serbia using disability adjusted life years (DALY), a composite measure of premature mortality and disability that equates to years of healthy life lost.

**Methods:** DALY, stratified by gender and age, were calculated for 18 health conditions for the population of Serbia without Kosovo and Metohia for 2000. Years of life lost (YLL) were calculated using 2000 county mortality statistics. Years lived with disability (YLD) were derived from age and gender specific disease incidence or prevalence (for a few conditions) and disability data from the 2000 update of the Global Burden of Disease Study. The age adjusted rates of DALY were calculated.

**Results:** The total burden of selected diseases and injuries in Serbia in 2000 was estimated at 621 993 DALY or 82 DALY lost per 1000 population. These selected conditions caused 484 995 YLL or nearly 60% of the total mortality burden in Serbia. DALY produced a substantially different ranking of disease and injury burden than did mortality rates alone. The leading five causes of DALY for males in the county were ischaemic heart disease (18.1/1000), stroke (12.4/1000), lung cancer (8.8/1000), road traffic accidents (6.7/1000), and depression (5.3/1000). For females, the leading five causes were ischaemic heart disease (17.9/1000), stroke (10.3/1000), depression (9.2/1000), lung cancer (7.7/1000), and breast cancer (4.3/1000).

**Conclusions:** Using composite indicators can assess the burden of disease in Serbia. The DALY measure is a promising tool to improve the capacity of public

### 081 HEALTH SITUATION IN GREECE AND COMPARISON WITH OTHER EUROPEAN COUNTRIES

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**Objectives:** To describe the long term trends and current status of health in Greece as well as in other European countries, using different health related outcome indicators, and to forecast future health needs in Greece. A further aim was to give the policymakers more and better information on health outcomes and trends in health status and to highlight some particular problems.

**Methods:** All data used for the calculation and graphical illustration of the different health related outcome indicators in Greece are provided by the National Statistical Service of Greece (ESYE). Ranking illustrations are made using data derived from the World Health Organization (WHO), the Organization for Economic Cooperation and Development (OECD), EuroHIV, and EuroTB reports.

**Results:** There was a substantial increase in the average life expectancy at birth in almost all European countries, as well as a transformation of the age structure to relatively greater proportions in the older age groups. Despite the dramatic decline in infant and perinatal mortality, Greece has one of the highest rates among other European countries. Over the past 3 decades, the cause specific mortality shows a shift to chronic diseases and injuries as the leading causes of death, mainly in the "old Europe". In comparison with other European countries, Greece achieves a number one ranking in traffic accident deaths and a number three ranking in mortality from cerebrovascular diseases. In contrast, it has one of the lowest rates in mortality from cancer and heart diseases. There was a total of 80 088 new cases of HIV infection and 11739 new cases of AIDS in the year 2002 in the WHO European Region. In western and central European countries HIV/AIDS incidence rates tended to be steady while eastern European countries display significant upward linear time trends since 1995, indicating an emerging AIDS epidemic in the near future. Since 1985, the number of tuberculosis cases has been increasing again, mainly in the central and eastern Europe. In 2001, more than 360 000 cases in the European Region were reported with an average incidence of 42.1 per 100 000 population.

**Conclusions:** In general, over the past 4 decades health status in Greece and in other European countries has improved significantly. This progress has not been entirely uniform across different indicators of health, and there are still substantial disparities among single geographical regions and countries. Under the prism of the "more

mobile" Europe we should give more attention to an effective disease control and prevention of HIV/AIDS and tuberculosis at both national and European level, in order to evaluate and plan programmes, target resources, and develop appropriate policies.

### 082 MORTALITY IN DENMARK IN AN INTERNATIONAL CONTEXT

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**Introduction:** In the first half part of the 20th century, life expectancy in Denmark was among the highest in the world. From the 1950s (men) and the 1970s (women), life expectancy levelled out in Denmark and in the 1990s Danish life expectancy was among the lowest in the developed countries.

**Objective:** To compare age and cause specific mortality rates between Denmark and other countries, thereby giving some clues to the causes of Denmark's position.

**Methods:** Mortality data was extracted from the World Health Organization database. These data were analysed for 20 countries for the period 1950–2000, where available. The countries included were: four northern European (Denmark, Norway, Sweden, and Finland), four western European (UK, Ireland, the Netherlands, and Belgium), four central European (Germany, France, Switzerland, and Austria), four southern European (Italy, Greece, Spain, and Portugal), and four outside Europe (USA, Canada, Australia, and New Zealand). Age standardised mortality rates were calculated according to country, sex, calendar time, and cause of death. To quantify Denmark's position, we calculated every country's rank position for each year.

**Results:** Denmark has very low mortality rates for children and young adults until 25 years of age. In the age group 25 to 44 years, male mortality was low until 1980 and after that Denmark was ranked in the lowest third among the 20 countries. The trend for women was even worse. The worst situation for Denmark was in the age group 45 to 64 years, where since 1980 Danish women have had the highest mortality rate among the 20 countries. Since 1990, only one or two countries in the age group 64–84 years had a higher mortality rate than Denmark. Denmark's rank in the late 1990s among the 20 countries was very poor for colorectal cancer, lung cancer (women), cancer of the uterus (women), chronic obstructive pulmonary disease (COPD), liver cirrhosis (women), and accidental falls (women). The trend in mortality in Denmark compared with the other countries has been worse for a number of conditions. These include oesophageal cancer, lung cancer (women), cerebrovascular diseases, diabetes (women), COPD, and liver cirrhosis.

**Conclusions:** The pattern of premature mortality offers some important clues to the causes of Denmark's position. In particular, the prominence of lung cancer, COPD and liver cirrhosis is a strong indicator of the decisive role that smoking and drinking throughout the 20th century has played in explaining the adverse position of both men and women relative to other countries. If Denmark is to improve its position, it must reduce mortality at a rate that is somewhat faster than the average for other countries. This analysis highlights the importance of making it a high priority to reduce exposure to tobacco smoke and alcohol.

### 083 RELATIONSHIP OF MATERNAL BODY MASS INDEX (BMI) AND WEIGHT GAIN DURING PREGNANCY TO PREGNANCY OUTCOME

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**Objective:** To describe the relationship between maternal anthropometry and pregnancy outcome.

**Methods:** Participants were non-smoking, 18–35 year old women who had been living in Krakow for at least a year before the recruitment and had no hypertension or diabetes before pregnancy. They were enrolled consecutively in prenatal clinics in Krakow between November 2000 and May 2003. During the second trimester of pregnancy, interviews were carried out with mothers about their demographic characteristics, environmental exposures during pregnancy, health status, and history of previous pregnancies. We also collected information about pregnancy outcome: birth weight, length, and head circumference. The analysis was based on available data for 472 mother–newborn pairs. We used the linear regression model to find relation between mother characteristic and pregnancy outcome and multivariate logistic regression model to find risk for lower birth weight, birth length, and head circumference.

**Results:** We found that the mean (SE) gestational age of newborns was 39.6 (1.14) weeks, birth weight 3445.5 (436.5) g, birth length 54.7 (2.63) cm and birth head circumference 33.9 (1.38) cm. Based on linear regression model we found that mothers with higher body mass index (BMI) before pregnancy delivered babies that were heavier ( $\beta=33.0$ ; SE 5.97), longer ( $\beta=0.13$ ; SE 0.04), and with larger head circumference ( $\beta=0.08$ ; SE 0.03). Similarly, a 1 kg increase of weight gain during pregnancy meant that newborns were heavier by 23.7 (3.49) g longer by 0.11(0.02), cm and had higher head circumference ( $\beta=0.05$ ; SE 0.01). Using the logistic regression model, we found that lower BMI before pregnancy was connected with a higher risk of delivery of a smaller baby. For example, we observed an odds ratio of 3.68 (95% confidence interval 1.93 to 7.02) for underweight mothers in comparison with the higher quintile of BMI distribution.

**Conclusions:** This study shows that pregnancy outcome is determined by maternal nutritional status before pregnancy, as measured by BMI and weight gain during the pregnancy.

### 084 EPIDEMIOLOGY OF VIRAL HEPATITIS IN POLAND IN THE YEARS 1997–2003

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**Introduction:** In Poland, widespread separate registration of cases of viral hepatitis types A (HAV), B (HBV), and C (HCV) was introduced in 1997; previously these types were detected only in selected specialised laboratories.

**Objective:** To present the epidemiology of viral hepatitis in Poland in the years 1997–2003.

**Methods:** Monthly and annual reports published by the National Institute of Hygiene for 1997–2003 were used. Data concerning sex and age structure as well as place of residence were analysed.

**Results:** In the studied period, the epidemiological characteristics of viral hepatitis have changed in Poland. Incidence of HBV per 100 000 population has decreased from 12.5 to 4.43, mainly due to extensive vaccination programmes. Incidence of HAV has also decreased (10.47 in 1997; 0.39 in 2003). At the same HCV incidence has increased from 2.58 to 5.59. This augmentation is due to better access to diagnostic tests. Incidence of co-infection with HBV and HCV has risen from 0.17 to 0.30. Most of the cases of parentally transmitted viral hepatitis concern males and inhabitants of urban areas. Peak incidence of parentally transmitted hepatitis was noted in the age groups 20–24 years and 40–54 years. HAV occurs mainly in the age group 5–30 years.

**Conclusion:** Epidemiology of viral hepatitis in Poland has undergone changes in the past 7 years, with a higher incidence of HCV and lower incidence of HAV and HBV.

### 085 ADVERSE HEALTH EFFECTS OF EMISSIONS FROM REGIONAL INDUSTRIAL COMPLEX IN AN URBAN POPULATION

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**Introduction:** The regional industrial complex (RIC) we report on consists of 17 chemical plants and the industrial toxic waste site that serves the entire country. Environmental monitoring did not indicate levels of pollutant concentrations above permissible levels at the RIC. Considering the possible synergistic effect of low level emissions and complaints of odour annoyance, we conducted an epidemiological study.

**Objective:** To evaluate adverse effects of the RIC emissions on health indicators of the exposed urban population over 25 years.

**Methods:** This epidemiological study (1995–2000) included the entire regional urban population stratified by gender, age and socioeconomic levels. As a surrogate measurement of the exposure we used the distance (>20 km and >20 km), and the wind direction from the RIC. Data on health indicators were collected from emergency room and hospitalisation files of the regional medical centre and mortality file of Central Statistical Bureau. Indirect age adjustment for emergency room visits (SER), hospitalisations (SHR) and mortality (SMR), Pearson correlation, Mantel-Haenszel age adjusted rate ratio (RR<sub>MH</sub>), and multivariate linear and logistic regression were applied for statistical analysis.

**Results:** Values of SER for complaints of respiratory tract disorders (breathing difficulties, cough), SHR for respiratory (ICD-9 codes 493, 490–496, 460–519, 786) and cardiovascular diseases (ICD-9 codes 390–459, 785), and SMR (ICD-9 codes 1–139, 140–208, 235–238, 390–459, 460–519, 520–579, 630–676, 740–759, 760–779, 780–



799) did not show an excess over the relevant adjusted rates among population living in the vicinity of the RIC. Values of  $RR_{MH}$  for this population (versus population remote from the RIC) were also not increased. The distance from the RIC, adjusted for gender and age, was not a predictor for the hospitalisation per person and the stay in a medical centre due to chronic obstructive pulmonary diseases (COPD). The number of hospitalisation events for COPD did not correlate with monthly frequency of the wind from the RIC. Positive correlation ( $r=0.67$ ,  $p=0.01$ ) between the number of emergency room visits due to breathing difficulties and monthly frequency of the wind from the RIC were found in one satellite town of the regional urban centre located within 20 km distance from the RIC.

**Conclusions:** This study performed for the first time in the region shows that emergency room visits due to breathing difficulties might be an alert to possible exposure to the RIC emissions. Further investigation is required.

### 086 UNEMPLOYMENT, CONTRACEPTIVE BEHAVIOUR AND REPRODUCTIVE OUTCOMES AMONG YOUNG AUSTRALIAN WOMEN

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**Objectives:** To test the hypothesis that welfare reliance provides incentives for single/early motherhood. If this hypothesis is true it would be expected that: (a) unemployed young women might be less likely to aspire to marry, more likely to aspire to having children and less likely to aspire to being unemployed than employed young women; (b) unemployed young women would be more likely to fall pregnant; and (c) unemployed young women may be more likely to give birth. It would be further expected that such differences could not be explained by differences in contraceptive practices.

**Methods:** The Australian Longitudinal Study of Women's health conducted postal out surveys of young Australian women (18–22 years) in 1996 and 2000. The current analysis used the following variables. (a) Unemployment: at time 1 women were considered unemployed if they indicated that they were unemployed and looking for work. All other women including those in full time study were considered not unemployed. (b) Aspirations at 35 years of age: the women were asked about whether they aspired to have children, be married and be working at 35 years of age. (c) Pregnancy, births and terminations: these were coded as dichotomous variables. The analyses only included outcomes that had occurred since time 1; this resulted in the exclusion of 234 women but the percentage of unemployed was still 6.9%. (d) Contraception: perceived need for contraception, and use of oral contraceptives and condoms at time 1 were also examined. Age, socioeconomic status of parents and area, and partnership status were taken into account in all analyses. Population studied: there were 14 779 women in the young group at time 1 and 9683 women at time 2. Most of the women (98.3%) had valid data on unemployment, with 6.9% of the sample reporting that they were unemployed and looking for work.

**Results:** Rates of pregnancy among young unemployed women were higher than rates among unemployed women. However, these differences do not reflect a response to the incentives provided by welfare. Unemployed women were less likely than employed women to aspire to be married by 35 years but were also less likely to aspire to have children and more likely to aspire to work at 35 years. There was also no evidence that unemployed women were less likely to see a need for or to use contraception. However, there was evidence that higher rates of pregnancy among unemployed women were the result of lower use of the contraceptive pill in this population.

**Conclusions:** Barriers to contraceptive use rather than incentives provided by the welfare system may be responsible for differences in the higher rates of pregnancy among young unemployed Australian women.

### 087 THE DEMOGRAPHICS OF HORSE RIDING INJURIES IN SOUTHEASTERN IRELAND

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**Introduction:** Horse riding has become a widespread and popular sport in Ireland, but it is associated with a high potential risk of injury. The demographics of injuries in this sport have not previously been adequately described in an Irish population, as reflected by the paucity of publications in the medical literature.

**Objectives:** To describe the demographics of horse riding injuries presenting to the accident and emergency department of a large tertiary hospital in Ireland.

**Methods:** This was a cross sectional study. Data was collected retrospectively for one calendar year from March 2002, with patients identified from triage notes. The data which included day of presentation, gender, age, mechanism, site, type of injury, management, and outcome was entered into a database specially formulated for the analysis of horse riding related injuries.

**Results:** We analysed 46 000 patient charts, and 144 horse riding injuries were identified. The weekend accounted for the majority of injury presentations (42%). Females were injured more frequently (54%). Most injuries occurred between the ages of 15 and 20 (24%), and 30 and 35 years (15%). The most common mechanism of injury was fall (67%), followed by kick (18%). The most common sites of injury were upper limb (36%) and lower limb (18%). Head injury accounted for 6% of injuries. Fractures (40%), followed by abrasions (37%) were the most common injury types. Of cases presenting to accident and emergency, the majority were discharged and followed up (71%), but the remainder required admission (29%). Among those that required follow up, the majority attended their GP (53%) or the fracture clinic (31%). Of those patients that required admission, the majority went to the orthopaedic department (72%). Patients who sustained a head injury were discharged home with head injury instruction and followed up (71%), or admitted for observation (29%). There was no fatality recorded during the period of study.

**Conclusion:** This is the first demographical study of horse riding injuries in Ireland. This study highlights increased frequency of injury in particularly the 15–20 year age group, and a high frequency of upper limb injury. Head injuries accounted for only a small proportion of injuries, compared with studies in other countries, probably due to effective use of protective helmets. Unfortunately, there is no approved protective gear for upper limbs, which, if worn, could potentially lessen injury risk.

### 088 SERUM ENTEROLACTONE CONCENTRATION IS NOT ASSOCIATED WITH BREAST CANCER RISK IN A NESTED CASE-CONTROL STUDY

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**Introduction:** The lignan enterolactone produced by the intestinal micro flora from dietary precursors has been hypothesised to protect against hormone dependent cancers.

**Objective:** To evaluate whether serum enterolactone is associated with the breast cancer risk in a nested case-control study.

**Methods:** Enterolactone concentrations were measured by time resolved fluoroimmunoassay in serum collected at four independent cross sectional population surveys from 206 women with breast cancer diagnosed during follow up (mean 8.0 years) and from 215 controls frequency matched to cases by study cohort, 5 year age group, and study area.

**Results:** Mean (SD) serum enterolactone concentration (nmol/l) did not significantly differ between case and control subjects (25.2 (22.2) versus 24.0 (21.3), respectively). No significant association between serum enterolactone concentration and risk of breast cancer was found: the odds ratio for the highest quartile was 1.30 (95% confidence interval 0.73 to 2.31) and  $p$  for trend was 0.48. Nor were any consistent associations observed when data were analysed according to years of follow up or according to menopausal status.

**Conclusions:** Our findings do not support the hypothesis that high serum enterolactone concentration is associated with reduced risk of breast cancer.

### 089 BLACK VICTIMS OF HOMICIDES IN METROPOLITAN SÃO PAULO, 2000

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**Objective:** To analyse the homicide rate by racial/ethnic origin in metropolitan Sao Paulo, after controlling for sex, education and age factors.

**Methods:** Based on vital statistics data available for São Paulo (Seade Institute) and the National Census (IBGE), the homicide rate for black and non-black persons in metropolitan São Paulo in 2000 were

calculated for 134 areas (38 municipalities and 96 capital districts). Further, two categories were created for each of the death certificate sociodemographic datapoints: sex, education, age, and race. Finally, each of the sociodemographic factors were analysed, the remaining three controlled.

**Results:** Although homicide rates in almost all the 134 geographic units in 2000 were higher for blacks than for non-blacks, the homicide rate for blacks was not significantly higher than for non-blacks when sex, education, and age factors were controlled. Homicide rates for young men with low socioeconomic status, the main risk group, were the same for blacks and non-blacks.

**Conclusion:** Although the homicide rate for black people was higher than for non-blacks in metropolitan São Paulo, racial/ethnic origin is a confounding variable. The higher homicide rate for blacks is derived from the over-representation of blacks among males, young, and mainly poor people.

### 090 MEDICINE USE PROFILE OF BRAZILIAN RETIRED CITIZENS: NATIONAL SAMPLE

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**Introduction:** There are more than 10 million beneficiaries of the Institute of National Social Security of Brazil (INSS) who are aged 60 years or more (seniors). This population quota presents peculiarities in medicine use. The Brazilian Confederation of Retired and Pensioners (COBAP) requested a study from the Ministry of Health to assist the national medicines policy.

**Objective:** To describe the medicine use profile of INSS senior beneficiaries in three samples: national, and Belo Horizonte and Rio de Janeiro municipalities.

**Methods:** Self report questionnaires were sent twice by post for a simple random sample of 3000 retired senior INSS beneficiaries January and February 2003.

**Results:** There were 1020 valid questionnaires returned (34.2%). There were no significant differences ( $p > 5\%$ ) between respondents and non-respondents in age groups, sex, socioeconomic regions, and amount received in benefits (median US\$67). Meanwhile, the oldest (80 years or over) and northern response rates were smaller, and sex rate was four men to six women. Only 10% had more than 9 years of education, and just one quarter have private health insurance, with significantly more expenses for drugs. Difficulties in appointment for consultation were the most frequent complaint. High blood pressure and visual impairment (almost 60% each) were the more prevalent health problems. About 85% had taken drugs in the previous 15 days, which cost them US\$28 (median), while one quarter spent US\$50 or more. Of the consumers, about 40% made use of more than four drugs. Almost 80% were purchased at commercial pharmacies. The 10 most often cited active substances were hydrochlorothiazide, captopril, diclofenac, acetylsalicylic acid, metimazole sodium, enalapril, acetaminophen, caffeine, furosemide, and glibenclamide. Near to 60% of all substances had an anatomical therapeutic action related to the cardiovascular and nervous system, and the alimentary tract and metabolism.

**Conclusion:** In despite of the low response rate, the reasonable resemblance between respondents and non-respondents suggests usefulness of results of this postal self report cross sectional survey. Expenditure with drugs took up a large proportion of the benefit wages, about 40%, disquieting for this weakened population group.

### 091 IVF MULTIPLES DO BETTER THAN IVF SINGLETONS COMPARED WITH NATURALLY CONCEIVED CHILDREN

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**Objective:** To examine the perinatal outcomes and major congenital anomalies (CAs) of singletons and multiples born as a result of in vitro fertilisation (IVF), including microinjections and frozen embryo transfers.

**Methods:** Data on IVF children ( $n=4559$ ) were obtained from healthcare registers: the reimbursement records of the Social Insurance Institution, the Medical Birth Register, and the Register of Congenital Malformations. Two separate control groups of naturally conceived children were identified from the MBR. The first one, consisting of all other children born during the same time period ( $n=179\,244$ ), was chosen to study perinatal outcomes, and the second one, consisting of 27\,022 children, was chosen to examine the major CAs. Perinatal outcome variables were compared using logistic regression, by adjusting

for the mothers' background variables (age, smoking, previous pregnancies, previous deliveries, and socioeconomic position in examining the perinatal outcomes; and age, parity, socioeconomic position, and region of residence in studying the major CAs), and by plurality, i.e. separately for multiples and singletons.

**Results:** 22% of IVF and 1% of control births were multiples. Compared with naturally conceived children, IVF children had more perinatal problems and major CAs. After checking by plurality, an increased risk of perinatal problems remained, with the exception of the mortality of IVF multiples (table 1). After adjusting for the mothers' background variables, the risk of poor perinatal outcomes was higher among singletons, but disappeared or decreased among multiples.

Among singletons, the adjusted odds ratio (OR) of major CAs showed a statistically significant increase for boys (OR 1.63, 95% confidence interval (CI) 1.23 to 2.15), but not for girls (0.97, 0.69 to 1.36). Among multiples, there was less of an increase (statistically insignificant) for boys (1.31, 0.64 to 2.71), but a statistically significant decrease for girls (0.45, 0.22 to 0.93).

**Conclusion:** Singleton IVF children had worse perinatal outcomes than naturally conceived children. This was not consistently so for multiple IVF children. This may provide an opportunity to study the causes of poorer outcomes of multiples in general.

**Table 1** Odds ratios of perinatal problems of IVF infants compared with naturally conceived children, by plurality

| Infant outcome             | Single              |                     | Multiple            |                     |
|----------------------------|---------------------|---------------------|---------------------|---------------------|
|                            | OR                  | Adjusted OR         | OR                  | Adjusted OR         |
| Gestation length <37 weeks | 1.70 (1.50 to 1.92) | 1.84 (1.62 to 2.10) | 1.28 (1.13 to 1.46) | 1.21 (1.07 to 1.36) |
| Birth weight <2500 g       | 1.64 (1.42 to 1.89) | 1.67 (1.43 to 1.95) | 1.24 (1.09 to 1.42) | 1.00 (0.89 to 1.14) |
| Perinatal mortality        | 1.58 (1.06 to 2.35) | 1.33 (0.88 to 1.99) | 0.79 (0.69 to 1.90) | 0.80 (0.53 to 1.20) |
| Major congenital anomaly   | 1.52 (1.25 to 1.84) | 1.30 (1.05 to 1.61) | 0.81 (0.52 to 1.27) | 0.80 (0.48 to 1.32) |

S, singletons; M, multiples

### 092 HEALTH STATUS AND THE QUALITY OF LIFE AMONG ELDERLY IN POLAND AND CROATIA

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**Introduction:** With the growing number of elderly it is necessary to look more carefully at the frail part of this population and find solutions to enable elderly people to contribute to the welfare of the societies they live in. It is especially important in the region described, Poland and Croatia, particularly with regard to access to the European Union and globalisation process.

**Objective:** To describe health status and the quality of life among the Polish and Croatian elderly and to explore differences between the countries as well as trends in gender and age differences among the elderly in those countries.

**Methods:** Randomly chosen elderly aged 65–85 years from Krakow, Poland, and from Zagreb and some smaller cities in Croatia were interviewed about their health (self rated health, physical functioning, mental health, perceived bodily pain, hearing and vision ability, morbidity, functional status, loneliness, and depression) and quality of life. The database (528 and 286 interviews with the Polish and Croatian elderly, respectively) was analysed using the Mann-Whitney *U* test, Kruskal-Wallis *H* test and general linear modelling.

**Results:** Significant differences in favour for the Croatian elderly were found in self rated health and perception of bodily pain (controlled for age, gender, education, and morbidity). The Polish elderly experienced fewer depressive symptoms and reported better vision ability and quality of life in comparison with Croatian elderly. With some exceptions (hearing and vision ability) our data confirmed better health status and

the quality of life in males in comparison with females in both countries. Significant trends confirm deterioration of health with age. However, the pattern of deteriorating health with age is inconsistent, more visible among females than among males. Results in Poland and Croatia were generally lower in comparison with elderly populations from Western Europe.

**Conclusion:** The presented results demonstrate the need to develop strategies and to build a more significant policy towards the elderly in central European countries to improve their health up to the level of the EU. Findings suggest that possibly a broad panel of instruments should be used to describe health inside each country and to compare health between countries.

### 093 HOSPITAL MORBIDITY AND MORTALITY CAUSED BY EXTERNAL CAUSES: HOW MUCH THE GOVERNMENT PAYS FOR THIS ASSISTANCE

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**Introduction:** External causes, and hence rates, of morbidity and mortality have been increasing substantially in Brazil, and resulting in heavy economic and social burdens, among them hospital costs.

**Objective:** To investigate and quantify hospitalisations for injuries and poisoning in the SUS (Unified Health System) hospitals or those licensed by it in Brazil and in the state of São Paulo, in order to determine the epidemiological characteristics of these patients and the hospital costs to the government, based on variables considered important.

**Method:** Hospitalisations in SUS or SUS licensed hospitals in the year 2000 were studied, based on information obtained from Datasus database for Brazil (11.937.323) and the state of São Paulo (2.226.530).

**Results and conclusions:** Study of natural causes (hospitalisations from problems related to pregnancy delivery and puerperum excluded) on the one hand, and external causes on the other showed that for both São Paulo and for Brazil as a whole, accidents and violence (which make up less than 10% of total hospitalisations) have a shorter hospital stay than do natural causes, and cost around 10% of the total amount for all hospitalisations. The average spent on payment of external cause hospitalisations is higher than those related to natural causes (19% for Brazil and around 5% for São Paulo state), and the per day cost, reaching about 50%, is also higher, both for the country as a whole, and for São Paulo state. Most frequent causes for hospitalisation were falls and transportation accidents: they had higher costs per day and higher average expenditures than the averages obtained. With transportation accidents, most of the hospitalisations were of young men. With falls, however, distribution was more homogenous among the different age groups: age extremes (children and senior citizens), however, were predominant. According to the findings, cost tripled with those that died during hospitalisation compared with those that were discharged. The findings obtained also show that, when analysing the type of the injury, those that died during hospitalisation had more severe injuries than those that were discharged. This study of morbidity and mortality following hospitalisation for external causes offers important data for hospital aid and for prevention of these events.

### 094 DOES MATERNAL SMOKING RESULT FROM A DELAY OF LUNG DEVELOPMENT IN FOETUS?

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**Introduction:** Exposure to tobacco in utero confers a risk for respiratory health disorders in children (acute respiratory diseases, chronic respiratory symptoms, reduced pulmonary functions); however, the mechanism of that association is still not clear. The hypothesis that the exposure to tobacco results in a delay of lung development was verified in a cross sectional approach.

**Objective:** To assess an influence of tobacco smoking on lecithin (L) and sphingomyelin (S) (surfactant elements; biomarkers of lung maturity) concentrations in amniotic fluid.

**Methods:** During physiological deliveries, amniotic fluid was taken from 25 women smoking during pregnancy and 39 non-smoking women. Data from a tobacco interview were confirmed by the measurements of nicotine in urine. Assessment of the concentration of surfactant elements was performed in reference laboratories, under quality assurance. Differences between concentrations were tested using standard procedures available in the Epi-Info software and assessed by logistic regression analysis (SAS program) controlling for maternal age,

gestational age, newborn's sex, birth weight, diseases during pregnancy, and Apgar scale evaluation.

**Results:** The means (SD) of laboratory outcomes were as follows. Smoking women: lecithin 4.16 (2.15) mg/dl, sphingomyelin 0.97 (0.35) mg/dl, and L/S 4.5 (2.09); non-smoking women: lecithin 5.04 (2.48) mg/dl and L/S 5.00 (2.10) mg/dl. The difference between the mean concentrations of lecithin in both examined group was marginally statistically significant ( $p=0.07$ ). However between subgroups defined by the results of nicotine in urine measurements (exposed  $n=10$ , non-exposed  $n=11$ ), the difference in the mean concentrations of lecithin (respectively: 3.65 mg/dl; 5.87 mg/dl) appeared to be statistically significant ( $p=0.03$ ). There was no difference between mean concentrations of sphingomyelin. The findings verified by logistic regression analysis showed that lecithin concentrations in amniotic fluid were associated with maternal tobacco smoking ( $p=0.002$ ), maternal age ( $p=0.04$ ) and sequence of delivery ( $p=0.04$ ).

**Conclusions:** Exposure to tobacco in uterus is statistically significantly associated with decreased level of lecithin in amniotic fluid. No association between exposure to tobacco in uterus and a level of sphingomyelin in amniotic fluid was found. A decreased level of lecithin in amniotic fluid associated with exposure to tobacco in utero could result in a delay in lung development. The findings suggest that maternal smoking during pregnancy may be an important factor predisposing infants to the occurrence of respiratory disorders.

### 095 ASSOCIATIONS OF CHILDHOOD SOCIOECONOMIC ENVIRONMENT, ADULT SOCIOECONOMIC STATUS, AND MATERIAL RESOURCES WITH SELF RATED HEALTH

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**Introduction:** Socioeconomic inequalities in health are well established but few studies have used a comprehensive approach and examined these inequalities by several socioeconomic indicators simultaneously.

**Objective:** To examine socioeconomic inequalities in self rated health by indicators ranging from childhood socioeconomic environment to adult socioeconomic status and material resources.

**Methods:** The data derived from the Helsinki Health Study baseline surveys in 2000–2002. Respondents to postal surveys were middle-aged employees of the City of Helsinki ( $n=8,970$ , response rate 67%). Associations between seven socioeconomic indicators and self rated health were examined by fitting a series of logistic regression models.

**Results:** When examined one at a time, each socioeconomic indicator was inversely associated with self rated health. The association between parental education and health disappeared when own education was adjusted for, but childhood economic difficulties remained associated with health independently of all other socioeconomic indicators. The associations of own education and occupational class with health attenuated but remained when adjusted for other socioeconomic indicators. The association between household income and health disappeared, but those of the other indicators of material resources, home ownership, and economic difficulties remained after full adjustment. The results were similar for women and men.

**Conclusions:** Both own education and occupational class showed consistent associations with health, but that of household income disappeared after adjusting for other indicators of socioeconomic position. The effect of parental education on health was mediated through the respondents' own education. Economic difficulties both in childhood and adulthood showed clear associations with self rated health on top of the key indicators of socioeconomic position.

### 096 ACCURACY OF MORTALITY STATISTICS: THE DESIRED GOAL

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**Introduction:** Mortality statistics are an important tool for the knowledge of the epidemiological profile of a population and, therefore, for planning actions on healthcare. In Brazil, they have been collated by the Mortality Information System of the Ministry of Health (SIM/MS) since 1975, which has an estimated coverage of 82%, varying throughout the country. Concerning the accuracy of data, a gradual improvement has been in progress, but there are still about 14% of deaths classified as

ill defined. A group of investigators of the School of Public Health of the University of São Paulo has been evaluating these statistics.

**Objective:** To show the accuracy of mortality data, based on successive investigations made by the group, and that it is possible to improve the quality of the statement of the underlying and associated causes of death.

**Methods:** The data source was the official death certificates, and for each case, a household interview, consultation of medical records, and necropsy reports were done. With all the information, a new death certificate was prepared, and compared with the corresponding original one. This allowed a mortality analysis, the closest possible to the actual causes, and the calculation of an adjustment factor, for each official cause.

**Results:** One way to measure the accuracy of mortality data has been through analysis of the proportions of death certificates with an ill defined or an incomplete diagnosis as an underlying cause of death. One research, carried out in cities of the country, considering all type of deaths (SIM Project), and another, in 27 Brazilian state capitals, observing deaths of women between 10 and 49 years old (GPP Project), has shown relevant gains of information. In both projects, over 70% of the ill defined deaths changed to a well defined. In relation to the incomplete diagnoses (septicaemia, heart disease, neoplasm), the methodology made it possible to clarify at least 50% of the cases. Of the deaths due to external ignored causes 82% were clarified; suicide doubled its frequency (SIM Project). The GPP Project estimated adjustment factors for maternal deaths (1.4), AIDS (1.2), diabetes (1.8), suicides (2.5), and mental disorders (2.1). In relation to the underenumeration of the deaths, the implementation of the Programme on Family Health of the Ministry of Health permitted the addition of deaths that were not detected into the SIM/MS, as the health agents collect all the vital event information.

**Conclusions:** The findings made it possible to show changes in the epidemiological landscape. Therefore, until the ideal goal of an adequate completion of the death certificate is reached, this methodology is suggested to improve the usefulness of mortality statistics.

#### 097 MUNICIPAL WASTE AND SPONTANEOUS ABORTION

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**Introduction:** Several experimental and occupational epidemiological studies have reported an association between exposure to specific chemical agents, potentially found in hazardous waste or municipal solid waste landfill sites, and alterations in reproductive outcomes, such as the risk of spontaneous abortion. However, studies conducted on human population have produced contradictory results, often not consistent with the original hypotheses. Reproductive outcome indicators, given the high frequency with which reproductive events occur, could have an important role in monitoring environmental pollution.

**Objective:** To evaluate the association between residence near waste sites in two Italian districts and the risk of spontaneous abortion.

**Methods:** A waste landfill site was selected in each of two Italian Districts, Reggio Emilia and Lecce. In each district, a maternity hospital was identified to conduct a retrospective case-control study on spontaneous abortion. The original study design required the selection of 300 spontaneous abortion (cases) and 600 live births (controls) in each hospital, in the period 1992-1995, when the waste landfill sites were in full activity. From medical records information was obtained on the main potential confounders: mother's age, parity, occupation, residence, severe diseases and, in Reggio Emilia, smoking habits. Women whose residence was within a radius of 5 km from the landfill site were considered exposed. The data were analysed using logistic regression.

**Results:** In the Reggio Emilia district study, 238 cases and 584 controls were analysed. The odds ratio (OR) associated with exposure, adjusted for all the potential confounders considered, showed a statistically significant increase in the risk of spontaneous abortion: OR 1.7; 95% confidence interval (CI) 1.2 to 2.5. In the Lecce district study, 377 cases and 613 controls were analysed. No statistically significant association was found between residence near the waste landfill site and risk of spontaneous abortion: OR=0.7; 95% CI 0.4 to 1.2.

**Conclusions:** These results do not add much strong evidence about the general association between residence near a waste landfill sites and spontaneous abortion. There are many difficulties in the interpretation of the results obtained from environmental studies such as this, including the complexity of taking full account of the socioeconomic characteristics, which may be confounded with the exposure, and the methodological

difficulty of defining the environmental exposure at an individual level. These limits imply that studies such as this may not be able to establish a general causal relationship between residence near a waste site and risk of spontaneous abortion. Indeed, residence near some sites may be safe while others may be hazardous in this respect. Nevertheless, the results reported from the RE part of the study implies that monitoring reproductive health in the vicinity of environmental hazards is warranted.

#### 098 RELIABILITY OF PATIENT IDENTIFICATION IN A MULTISOURCE WEB DATABASE

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**Introduction:** Difficulties in reconstituting patients' movements in the public health information systems are raised by errors in patient identification processes, especially in the case of a shared and multisource information system. A crucial goal to achieve is to assign and retrieve a unique identification for each patient. It is therefore necessary to identify the relevant personal data for unique identification as well as the relevant comparison method between user entry data and stored data. The comparison outcome should remain correct even if a number of errors affect the data.

**Methods:** After exploring existing methods, we focused on the Needleman and Wunsch algorithm (originally designed for nucleic acid sequence alignment). We demonstrate how it can be used and optimised for error tolerant identity matching. Variants of the Needleman and Wunsch algorithm were developed in the context of an information system dedicated to tracking patients with end-stage renal disease at both regional and national levels. We used a test sample of 73 000 records and a simulator of random error in the input.

**Results:** We obtained an acceptable detection time: 1.4 seconds with a Pentium III processor for our sample of 73 000 entries. The error tolerance was up to 10%. We established the best parameter's values for sensitivity and specificity: the error threshold in particular was adjusted to 5.

**Discussion:** The adapted variant of the Needleman and Wunsch algorithm, given an appropriate choice of a representative "signature string" (a concatenation of personal attributes for each patient), appeared to be more efficient than other methods in terms of specificity/sensitivity ratio and more flexible considering the scope of the different kinds of possible errors, at the cost of a slightly longer but still fair answering time.

**Conclusion:** A variant of the Needleman and Wunsch algorithm designed as "cut-off heuristic", proved to be efficient for the search of double entries occurring in nominative multisource web databases.

#### 099 SOCIOECONOMIC AND PSYCHOSOCIAL FACTORS ASSOCIATED WITH PERCEIVED HEALTH IN FIVE FRENCH UNDERPRIVILEGED URBAN AREAS OF THE PARIS REGION, 2001

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**Objective:** We studied the possible association between socioeconomic and psychosocial factors and bad or very bad perceived health.

**Methods:** The multicentre cross sectional survey concerned 525 individuals living in five French underprivileged urban areas in the Paris region. The association between perceived health and 30 variables was examined using logistic regression adjusted for age, gender, and declaration of at least one chronic or severe disease. The bootstrap method allowed us to evaluate the stability of the results.

**Results:** In addition to their advanced age and male gender, poor perceived health is associated with living alone (OR 2.4; 95% confidence interval (CI) 1.2 to 5.0), not having any diploma (OR 2.4; 1.2 to 4.7), life course experience of physical or sexual abuse (OR 2.8; 1.2 to 6.1), at least 6 months' unemployment (OR 2.6; 1.3 to 4.6), experience of discrimination in professional life (OR 2.2; 1.2 to 4.4), low social support (OR 3.1; 1.7 to 5.9), low efficiency level (OR 2.7; 1.1 to 6.7), low level of coherency (OR 2.2; 1.0 to 5.0), and unfulfilling personal life (OR 2.2; 1.0 to 5.0).

**Conclusions:** This survey shows that, besides objective health characteristics (absence or presence of chronic disease), several psychosocial and socioeconomic aspects other than those generally studied in the literature (social class and educational level) are associated with perceived health.

### 100 RACIAL, SOCIODEMOGRAPHIC, AND PRENATAL AND CHILDBIRTH CARE INEQUALITIES IN THE MUNICIPALITY OF RIO DE JANEIRO, BRAZIL, 1999–2001

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**Objective:** To analyse social inequalities and inequalities in access to and utilisation of healthcare services in relation to skin colour in a representative sample of postpartum women receiving hospital childbirth care in the municipality of Rio de Janeiro.

**Methods:** This was a cross sectional study with a sample of 9633 postpartum women, of whom 5002 were white (51.9%), 2796 brown (29.0%), and 1835 black (19.0%), from public maternity hospitals, hospitals contracted out by the Unified National Health System, and private hospitals in Rio de Janeiro in 1999–2001. The data were collected by consulting patient records and through interviews with the mothers in the immediate postpartum period, using standardised questionnaires. The methodology used  $\chi^2$  tests to analyse homogeneity of proportions and Student's *t* test for comparison of measures. The analysis was stratified by level of maternal schooling.

**Results:** A persistently unfavourable situation was observed for women with brown and black skin compared with white women. Women with brown and black skin included the highest proportions of adolescent mothers, low schooling, lack of paid work, and women without partners. History of physical aggression, smoking, attempts to interrupt the pregnancy, and visits to several hospitals before succeeding in being admitted for labour and childbirth were more frequent among black women, followed by brown and then white women with less schooling. The group with more schooling showed better indicators, but repeated the same pattern. This gradient was maintained, but in the opposite direction, in terms of satisfaction with prenatal and childbirth care.

### 101 PROFILE OF THE EPIDEMIC OF AIDS IN A PUBLIC GENERAL HOSPITAL IN RIO DE JANEIRO, BRAZIL

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**Introduction:** From 1980 to September 2003, the Ministry of Health notified 277 154 cases of AIDS in Brazil; 197 340 were men. During this period, the pattern of the epidemic has changed, with an increase of the proportion of cases among women and people with poor socioeconomic status, an increase in heterosexual transmission, and a decline in reported AIDS associated opportunistic infections (candidiasis, tuberculosis, *Pneumocystis carinii* pneumonia (PPC), neurotoxoplasmosis, Kaposi's sarcoma, cryptococcal meningitis, and protozoa infections). The Hospital dos Servidores do Estado (HSE) is a public general hospital in Rio de Janeiro, Brazil, with an active surveillance service that has gathered surveillance data on 1946 cases, observing a decline in the male:female ratio from 24:1 in the 1980s to 0.9:1 in 2002.

**Objective:** To analyse the pattern of the AIDS cases assisted at HSE from January 1982 to October 2003 that were notified and investigated through the Information System of Notifying Diseases (SINAN).

**Methods:** We analysed 1946 cases of AIDS >12 years old, meeting the diagnostic criteria recommended by the National Epidemiological Surveillance System. Data were collected through the epidemiological investigation chart and stored at the local level in SINAN. Analysis was accomplished through Epi-Info 6.04. The study was observational, descriptive, and retrospective.

**Results:** Of the cases, 70% were men and 30% women, with an average age of 36 years. In the period between 1982 and 1986, 90.2% were men and 9.8% women; in 2000, the male:female ratio was the same, and in 2003, the proportion of women became larger (68.7%). There were 29.9% younger than 30 years old, 37.9% were between 30 and 39 years old, 20.8% between 40 and 49 years old and 11.5% greater than 50 years old. There was a reduction in the proportion of the age group of 30–39 years old from 39% in 1986 to 32.8% in 2003, and an increase in the cases younger than 30 years old from 24.4% to 44.8%. The more frequently observed opportunistic conditions were: candidiasis (62.7%), persistent cough (41.9%), diarrhoea (39.3%), dysfunction of the central nervous system (31.9%), and tuberculosis (25.6%). During the study period, we observed a declining trend in the incidence of candidiasis, Kaposi's sarcoma, diarrhoea, and PPC. Tuberculosis and cerebral toxoplasmosis stayed stable.

**Conclusions:** The cases of AIDS in HSE follow the national pattern of increasing proportion of women, increasing proportion of younger than 30 years old, and decline in the frequency of associated diseases, except

for tuberculosis and toxoplasmosis. The high proportion of persistent cough and dysfunction of the central nervous system partly reflects local problems of differential diagnosis. The fact that HSE is a reference hospital for high risk pregnancy, including HIV women, may have influenced the increase in the local proportion of women.

### 102 EVALUATION OF THE TUBERCULOSIS SURVEILLANCE SYSTEM AND PREVENTION AND CONTROL PROGRAMME, DISTRICT OF CORIA, EXTREMADURA, SPAIN, 1997–2002

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**Introduction:** During 2001 and 2002 the Spanish Field Applied Epidemiological Programme (PEAC) was invited by the Extremadura Health Board to study the tuberculosis (TB) situation in the Coria Health District and the village of Riolobos.

**Objective:** To evaluate the TB epidemiological surveillance system as well as the prevention and control programme for 1997–2002.

**Methods:** A descriptive study was carried out in terms of time, place, and person. The real incidence of TB was estimated using capture–recapture methods on three data sources (registers of notifiable disease, and clinical and laboratory records). US Centers for Disease Control and Prevention criteria were considered to assess the qualitative and quantitative attributes. The evaluation of the patient management and the control programme were performed using indicators previously established.

**Results:** The average incidence of TB was 33.70 cases/100 000 inhabitants. Cases were aggregated around three areas: Coria, Ceclavin, and Riolobos-Torrejoncillo. The male ratio was 1.46. Among males, the most affected age group was 25 to 44 years, among women was 15 to 24. A total of 183 cases were estimated, 54 more than the 129 found from the sources. The sensitivity was 60.16%, positive predictive value (PPV) was 92.5%, and exhaustivity was 43.7%. The medical records were poor quality. The mean opportunity of treatment was 47 days. The surveillance system was considered simple and flexible, as it was able to adapt to several health system reforms. The system showed low acceptability to the notifiers. Fifteen per cent of the cases had been previously treated, and 71.40% had been hospitalised. The follow up of the cases took place in hospital. Regarding treatment results, 61.70% were considered as successful. Only 19% of the TBC cases had had a contact study.

**Conclusions:** A high endemicity remained stable during the study period. The mean annual rate was higher than western Europe (<1.5 cases/100 000 inhabitants) and higher than in Extremadura (30.61 cases per 100 000). Diagnoses of TB cases were made in advanced stages of the disease. Almost all cases were laboratory confirmed. Among the system attributes we found low sensitivity, exhaustivity, and quality, and high PPV. The recommendations are: (a) to review the TB prevention and control programme, (b) to train and advise medical doctors, (c) to ensure case follow ups and contact studies, (d) to strengthen the health district team by enrolling an epidemiologist or a preventive medicine specialist to develop and apply a specific clinical pathway for the TBC cases, (e) to develop a health education programme, (f) to manage the previously treated cases to control community TB infections, and (g) to ensure the periodic evaluation of the entire programme. These recommendations are being implemented.

### 103 THE USE OF A GEOGRAPHIC INFORMATION SYSTEM IN DENGUE EPIDEMIOLOGY, CAMPINAS, BRAZIL, 2001–2003

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**Introduction:** Dengue remains a major public health problem. New techniques for the improvement of epidemiological analysis, such as geographic information systems (GIS) may be a useful tool for its epidemiological analysis.

**Objective:** To evaluate the usefulness of a GIS in epidemiological analysis of dengue epidemics that occurred in the city of Campinas, Brazil, during the summers of 2001/2002 and 2002/2003.

**Method:** State and municipal health authorities used a GIS to plot geographically dengue cases that occurred within the time frame. Several information sources were used: mandatory reporting dengue cases databank, digital maps of city streets, and Census 2000 data. Geographic distribution of cases was analysed for both time periods, after point interpolation using the IDW method. Census data were also mapped, using the same method, having as reference the centroid of census tracts. Census data means were calculated after the interpolation process. A condensed map with all study variables was then obtained. The two epidemics were compared with each other, and also analysed considering the city's population distribution and the socioeconomic situation of the population.

**Results:** Spatial distribution of dengue cases was similar to the city's urban area population distribution. The 2001/2002 epidemic presented a higher transmission level than the 2002/2003 one, but only a few areas presented higher case density compared with the latter. The region in one of the sides of a major highway (Anhanguera Highway) presented a higher case density; this region's population presents a worse socioeconomic situation. Higher case density areas correspond to the distribution of subnormal housing standards.

#### 104 THE STRUCTURE OF SELF RATED HEALTH AMONG OLDER ADULTS IN BRAZIL: THE BAMBUI HEALTH AND AGEING STUDY

M. Lima-Costa, J. Firmo, E. Uchôa. *Oswaldo Cruz Foundation, René Rachou Research Center, Brazil*

**Objective:** To investigate the factors associated with self rated health among older adults, considering five dimensions: sociodemographic, social support, lifestyle risk factors, health status, and access/use of health services.

**Methods:** From 1742 individuals (>60 years old) residents in Bambuí town, Minas Gerais, 1516 (87.0%) participated in this study. The information was obtained through standardised interview, blood tests, and physical examinations.

**Results:** Self rated health as good/very good, reasonable, and bad/very bad was reported by 24.7%, 49.2%, and 26.1%, respectively. Positive and independent association with worse self rated health were found for: social support (satisfaction with social network and attendance to clubs or associations), health status (psychological distress in past 2 weeks, insomnia in past 30 days, number of prescribed medications used in past 90 days) and access/use of health services (problems when seeking medical care, number of doctors' visits, and number of hospital admissions in past 12 months). A negative and independent association was found for household monthly income (2.0 times Brazilian minimum wages).

**Conclusions:** Our results show a multidimensional structure of self rated health among older adults, including socioeconomic circumstances, social support, health status (mostly mental health), and access/use of health services. This structure is similar to the World Health Organization's definition of health as complete physical, mental, and social wellbeing.

#### 105 VALIDITY OF SELF REPORTED HYPERTENSION AND ITS DETERMINANTS (THE BAMBUI HEALTH AND AGEING STUDY)

M. Lima-Costa, S. Peixoto, J. Firmo. *Oswaldo Cruz Foundation, René Rachou Research Center, Brazil*

**Objectives:** To assess the validity of self reported hypertension and its determinants among adults living in a community with low formal education level in Brazil.

**Methods:** A simple random sample of residents in Bambuí town (MG) aged >18 years was selected. Three blood pressure measurements were performed in 970/1086 study participants. Sensitivity, specificity and positive and negative predictive values of self reported hypertension were assessed in relation with hypertension (mean blood pressure >90 or >140 mm Hg and/or present use of anti-hypertensive drugs).

**Results:** Sensibility and specificity of self reported hypertension were 72.1% (95% confidence interval (CI) 69.3 to 75.0) and 86.4% (84.3 to 88.6), respectively. Its prevalence was 27.2% (24.4 to 30.1), being reasonably similar to the hypertension prevalence (23.3%; 20.7 to 26.1%). The validity of self reported hypertension was higher among women, and in those aged 40–59 and >60 years, those who had visited a doctor more recently (<2 years) and those with higher body mass index (>25 kg/m<sup>2</sup>).

**Conclusions:** The results of this study indicate that self reported hypertension is an appropriate indicator of the hypertension prevalence, even in a population with low formal education level.

#### 106 LUNG CANCER AND INDOOR POLLUTION IN POLAND

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**Introduction:** Of the four categories of indoor pollution (combustion products, chemicals, radon, and biological), research in developing countries has focused on combustion generated pollutants, and principally those from solid fuel fired cooking and heating stoves. Such stoves are used in more than half the world's households and have been shown in many locations to produce high indoor concentrations of particulates, carbon monoxide, and other combustion related pollutants. A number of studies have been carried out, mostly in South Asia, Latin America, and China to discover the health effects of exposure to such stoves. No such studies were ever been done in eastern Europe, where many residents have a long tradition of burning coal and unprocessed biomass (wood, sticks, crop residues) for heating and cooking. We present data from the case-control study carried out in the two largest cities of Poland: Warsaw and Lodz. The study was performed within the frame of the large International Multi-Centre IARC study on Occupational Exposure and Lung Cancer in Central and Eastern Europe.

**Methods:** We interviewed 800 cytologically/histologically confirmed patients with lung cancer diagnosed between 1998 and 2002 and 847 population based controls, frequency matched by age. We questioned subjects about specific types of fuel for heating and cooking for each residence they lived before cancer diagnosis (for cases) and date of interview (for controls). We used unconditional logistic regression to estimate the odds ratios (OR) and 95% confidence intervals (CI). All analyses were adjusted for matching factors (centre, age, sex), for smoking and education level. Interaction between variables was determined by a likelihood ratio test.

**Results:** The odds ratio for lung cancer associated with solid fuel use in the house was 1.54 (95% CI 1.15 to 2.07). Risk increased to 5.11 (95% CI 2.54 to 10.31) for those who had only used solid fuels compared with those who had never used solid fuels at their homes. Those who were exposed to mixed fuels (solid plus any modern one) were also at increased risk (OR 1.39) but this was only borderline significant. The risk for lung cancer increased relative to the percentage time that solid fuel was used at home (p for trend = 0.002); OR for the longest use (over 50% of the subject's life) was 2.23.

**Conclusions:** Our data suggest a modestly increased risk of lung cancer related to solid fuel burning in home, which increases with an increasing percentage of the lifelong time that such fuels are used.

#### 107 SEXUAL BEHAVIOUR OF YOUNG PEOPLE/ADULTS STUDYING STATE EDUCATION IN MAPUTO, MOZAMBIQUE

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**Introduction:** HIV/AIDs is prevalent in Mozambique, and affected 12% of the adult population in 2002.<sup>1</sup>

**Methods:** The study was carried out by using a questionnaire, "Self efficacy for AIDS",<sup>1</sup> which included open and set questions, and was used with a group of students from the city of Maputo. All the characteristics are described by using means and standard deviations for the quantitative characteristics and by using relative frequencies and a 95% confidence interval ( $\chi^2$ ,  $p \leq 0.05$ ) for the qualitative characteristics.

**Results:** It has been observed that young people talk more to their friends on themes related to HIV and sexuality, and that they look for the information they need in books, rather than their parents or their school. Among the reasons that make the systematic use of condoms difficult for women are: the lack of information, the desire to have children, and their partner's refusal to use one. The reasons for men are: being involved in a stable sexual relationship and their association of condoms with reducing sexual pleasure.

**Conclusions:** The limited perception to how vulnerable people really are to HIV and sexually transmitted infections is one of the main causes why sexual practices that are not beneficial to the health continue.

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2. **Lopez-Rosales F**, Moral-de la Rubia J. [Validation of a self-efficiency scale for the prevention of AIDS among adolescents.] *Salud Publica Mex* 2001;**43**:421–32 (Spanish).

## 108 OCCUPATION AND THYROID CANCER RISK IN SWEDEN

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**Introduction:** Although thyroid cancer (TC) is a relatively rare neoplasm, it is one of the most frequent cancers under the age of 45 years. There are few studies on occupation as a risk factor for thyroid cancer (TC) and little consensus among their results.

**Objective:** To identify the occupational risk of TC in Swedish men and women.

**Methods:** The historical cohort of all active Swedish men aged 25–59 years, recorded in the 1960 census, who were gainfully employed and over the age of 24 years in the 1970 census (1 779 646 men; 1 066 346 women), was followed during 1971–1989 through record linkage with the Swedish National Cancer and Death registers. For each job category we calculated age standardised incidence ratios (SIR) as well as age period geographically adjusted relative risk (RR) of TC, which were computed using log linear Poisson models. The whole cohort was taken as reference in a general analysis, and only workers within the same occupational sector were used in an intrasectorial approach in order to adjust for socioeconomic status. SIR and RR were also computed for the subcohort of individuals who reported the same occupation both in 1970 and 1960 censuses. Men and women were analysed independently.

**Results:** During follow up 1103 TC cases were found in men, and 1496 cases in women. Jobs with RR  $\geq 2$  and cases  $\geq 3$ , or RR  $\geq 1.2$  and cases  $\geq 10$  were considered. In men, statistically significant excess risks were found for prison/reformatory officials (RR 3.56), policemen (RR 2.12), paper pulp workers (RR 2.11), and construction carpenters/joiners (RR 1.41). Positive increased risks not achieving statistical significance were also detected for forest workers/log drivers (RR 1.42) and practical nurses/hospital orderlies (RR 3.06). In women, statistically significant excess risks were obtained among forest workers/log drivers (RR 3.35), shoe cutters/lasters/sewers (RR 2.46), tailors/dressmakers (RR 1.81), medical technicians (RR 1.85), practical nurses/hospital orderlies (RR 1.22), and shop managers (RR 1.80). Subcohort analysis corroborated these results.

**Conclusions:** Our results suggest an association with thyroid cancer for wood workers, auxiliary health personnel, some textile and shoe manufacturing workers, and prison or police officials. This might reflect the influence of chemical agents and/or electromagnetic fields. This hypothesis will be tested with a job exposure matrix.

## 109 INFANTILE MORBIDITY ACCORDING TO MATERNAL PERCEPTION AND BREASTFEEDING

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**Introduction:** The protection factors present in the maternal milk adjust in a particular way to the immunological immaturity of the newborn. Owing to the importance of breastfeeding in the prevention of morbidity in newborns and the possible effects of the many types of breastfeeding on morbidity, we considered three types of breastfeeding: exclusive maternal breastfeeding versus non-exclusive maternal breastfeeding or non-maternal breastfeeding; breastfeeding plus non-human milk versus breastfeeding without non-human milk, and breastfeeding versus non-breastfeeding.

**Objective:** To study the possible associations between the breastfeeding type and the child morbidity occurrence, according to the perception of the mother, in a child cohort from birth until 90 days of life.

**Methods:** We followed 450 children born in the teaching hospital of the University of São Paulo. The event of interest was the first occurrence

of any morbidity of the child, as perceived by the mother, according to the two categories of each breastfeeding type. A counting process with robust variance Cox extension model was used. The main independent variable "breastfeeding type" changed over time; other independent variables were included to control for possible confounded effects.

**Results:** The estimate hazard ratios were 1518 ( $p=0.000$ ; 95% confidence interval 1.225 to 1.879) for exclusive breastfeeding versus non-exclusive breastfeeding or not breastfeeding at all, and 1.407 ( $p=0.006$ ; 1.105 to 1.791) for breastfeeding versus breastfeeding supplemented with non-human milk.

**Conclusions:** Exclusive breastfeeding is a protection factor and cow milk is a risk factor for morbidity episodes. Caesarean section delivery and tobacco use by the mother are independent risk factors for morbidity episodes.

## 110 MATERNAL PERIODONTAL DISEASE AND PRETERM AND LOW BIRTHWEIGHT: A POPULATION BASED CROSS SECTIONAL STUDY IN SOUTHERN BRAZIL

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**Introduction:** Periodontitis is a chronic inflammatory disease caused mainly by Gram negative bacteria. It is hypothesised that periodontitis can contribute to an adverse outcome of pregnancy. Toxins generated by periodontal bacteria in the mother can reach the blood circulation, cross the placenta, and harm the fetus. In addition, the response of the mother's immune system to the infection activates the release of inflammatory mediators, growth factors, and other potent cytokines, which may trigger preterm labour. The relationship between periodontal diseases in pregnancy and children born prematurely or with low birth weight has been increasingly investigated, but with inconclusive results.

**Objective:** To test the hypothesis that maternal periodontal diseases during pregnancy are associated with preterm birth or low birthweight.

**Methods:** A cross sectional study was carried out in Itajaí, a medium sized city in Southern Brazil. A random sample of 449 pregnant women was interviewed and clinically examined until 48 hours after the delivery at the only hospital of the city. The outcomes investigated were the low birthweight (<2500 g) and preterm birth (born <37 weeks of gestational age). Periodontal diseases were defined as follows: (a) the presence of periodontal pocket equal or deeper than 3.5 mm present at least in one site after probing all teeth; (b) the presence of periodontal pocket and periodontal pocket equal or deeper than 3.5 mm in at least four sites of the mouth. Control variables included sociodemographic, general health, and maternal behaviour during the pregnancy collected by a pre-tested questionnaire. In addition, anthropometrical measures of women before the pregnancy and women's health related information were obtained through hospital medical records. Simple and multiple logistic regression models were fitted for the two outcomes investigated.

**Results:** We interviewed and dentally examined 449 women. No association was found between periodontal disease and low birthweight. On the other hand, periodontal pocket in at least one site in the mouth was associated with preterm birth after adjusting for mother's schooling, parity, number of previous low birth children, prenatal care and body mass index. After the introduction in the logistic regression model of maternal health condition variables during the pregnancy the statistical significance was lost.

**Conclusions:** The results do not corroborate the hypothesis linking periodontal disease during pregnancy and preterm or low birth weight children. The role of confounders in that association must be carefully investigated.

## 111 ENAMEL DEFECT AND PRETERM AND LOW BIRTHWEIGHT: A BRAZILIAN CASE-CONTROL STUDY

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**Introduction:** Developmental defect of dental enamel (DDE) is used in anthropological contexts to reveal information about physiological stress during neonatal period. Preterm and low birthweight children are considered as the most important childhood health predictors, comprising approximately 10% of all live births in Brazil and in several other countries. From a dental public health perspective, DDE is a dental caries predictor.

**Objective:** To estimate the prevalence of DDE in primary dentition of schoolchildren aged 3–5 years. In addition, the association between DDE and children born with low birth weight and prematurity was tested.

**Methods:** A two phase study was undertaken in Itajaí, a medium sized city in Southern Brazil. The first phase was a cross sectional study in a two stage random sample of 431 pre school children aged 3–5 years.

After that a case-control study was carried out. Cases ( $n = 102$ ) were those children who presented at least one tooth surface with DDE according to the modified DDE index<sup>1</sup> in the cross sectional study. Controls ( $n = 115$ ) were selected among those without DDE matched by sex, age, and classroom. All teeth were clinically examined by a single qualified dentist. A questionnaire was applied in order to obtain sociodemographic and maternal and children's health information. In addition, gestational age, birthweight, and prenatal care were collected from official records. Explanatory variables were prematurity (<37 weeks of gestational age) and low birth weight (<2500 g). Confounders such as mother's schooling, maternal health problems during the pregnancy, and children's health problems during the first year of life were controlled. Simple and multiple conditional logistic regression analysis were performed.

**Results:** A DDE prevalence of 24.4% (95% confidence interval 95% 20.3 to 28.5) was found. Preterm birth children were associated with DDE (odds ratio (OR) 2.6; 95% CI 1.0 to 6.4) after adjusting for possible confounders. An unexpected finding was the association between DDE and children who did not breastfeed (OR 3.2; 95% CI 1.2 to 8.4). No interactions between prematurity and low birth weight, or between prematurity and breastfeeding were identified.

**Conclusions:** A high prevalence of DDE was found in the studied population. Children born prematurely and those who did not breastfeed were more likely to have DDE.

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### 112 AN APPRAISAL OF GASTRIC CANCER RESEARCH IN CANCER JOURNALS

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**Introduction:** The scientific, clinical, and public health priorities of affluent societies tend to prevail in biomedical literature, failing to reflect the global disease burden. Gastric cancer is becoming a "cancer of the poor" and has potential to be a neglected disease in both research efforts and editorial priorities.

**Objective:** To assess the trend in the proportion of gastric cancer papers in major cancer journals, the research fields of interest in research, and the first author affiliation.

**Methods:** Articles addressing cancer in general and stomach cancer in particular were quantified through a PubMed search for 1982–1984 and 2000–2002, and abstracts of gastric cancer articles were hand searched. The *British Journal of Cancer*, *Cancer Research*, *International Journal of Cancer*, and the *Journal of the National Cancer Institute* were included in the journal survey.

**Results:** For the study period we identified 14 429 cancer articles, 3.1% addressing stomach cancer (2.9% in 1982–1984 and 3.3% in 2000–2002). The proportion of stomach cancer articles from Asian countries increased (32.2% versus 50.2%) and a decline was observed in the publications originating from the USA (35.9% versus 15.1%). European countries contributed with respectively 25.6% and 32.0% of the articles. When mechanisms/aetiology/risk factors were the study topic, genetics was rarely addressed in 1982–1984 (11.5%), but was the most frequent in 2000–2002 (61.6%). Occupation was a common topic in the first period (15.4%), but was studied in 0.8% of the more recent studies. The proportion of studies including dietary factors (19.2% versus 14.4%) or smoking (3.8% versus 6.4%) was similar in both periods. *Helicobacter pylori* infection was the subject in 9.6% of the articles for 2000–2002.

**Conclusions:** The overall proportion of stomach cancer articles is largely below its expected share considering the malignancies worldwide. Gastric cancer research does not reflect the geography of the biomedical publication world, and a clear trend is observed favouring the evaluation of genetic factors.

### 113 RESULTS OF THE FIRST SCREENING ROUND IN THE FINNISH RANDOMISED TRIAL FOR PROSTATE CANCER

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Finland; <sup>7</sup>University of Tampere, Tampere School of Public Health, Tampere, Finland

**Introduction:** Prostate cancer screening is becoming increasingly common despite the fact that its effectiveness has not been demonstrated. The assessment of the effect of screening on mortality and quality of life requires large randomised controlled trials with long follow up. A randomised trial of prostate cancer screening coordinated at the Finnish Cancer Registry has been ongoing since 1996 as a part of the European Randomised Study on Prostate Cancer Screening (ERSPC).

**Objective:** The purpose of this study was to assess the feasibility of a large scale randomised trial by intermediate indicators of outcome after the first screening round of the trial.

**Methods:** In 1996–1999, during the first screening round 80 458 men 55–67 years of age from two areas in Finland were identified from the population registry and randomised either to the screening arm (32 000) or the control arm (48 458). Men with a serum prostate serum antigen concentration of 4.0 ng/ml or higher were referred for diagnostic examinations including digital rectal examination, transrectal ultrasound, and transrectal biopsy of the prostate.

**Results:** The participation rate was 68%. Of the 20 792 screened participants, 1825 (8.8%) had a serum prostate specific antigen concentration of 4.0 ng/ml or higher, and diagnostic examinations were performed on 1728 of them. Of these, 461 screen detected cancers were diagnosed, corresponding to a prostate cancer detection rate of 2.4% and a positive predictive value of 25%. The proportion of grade II–III was 54%.

**Conclusions:** The Finnish prostate cancer screening trial demonstrates that screening is acceptable to the target population. The detection rate and the positive predictive value of a prostate specific antigen concentration above 4 ng/ml is reasonable, and the cancers detected have characteristics indicating that not only indolent but also potentially lethal, aggressive cancers are detected. Possible reduction in prostate cancer mortality cannot be demonstrated before at least 10 years of follow up.

### 114 PREVALENCE AND DISTRIBUTION OF ISOLATED SYSTOLIC HYPERTENSION IN PORTUGAL: THE PAP STUDY

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**Introduction:** Portugal has one of the highest prevalences of strokes in the world. Hypertension is a major cause of cerebrovascular diseases in most countries. Few epidemiological data about blood pressure in Portugal exist.

**Objective:** To assess the prevalence and distribution of isolated systolic hypertension in a representative Portuguese population sample.

**Methods:** This was a cross sectional household based survey of 5455 Portuguese adults, aged 18–90 years. Standardised techniques were used for blood pressure, height, and weight measurements. Isolated systolic hypertension was defined as systolic blood pressure >140 mmHg and diastolic <90 mmHg.

**Results:** The preliminary results of this survey showed that the prevalence of isolated systolic hypertension was 16.0%. A different prevalence was found in both sexes: males with 21.7% and females with 12.6%. Isolated systolic hypertension was more common, 25.5%, in older people (age >45 years) than younger (7.6%). Finally, only 5.9% of hypertensive people have their hypertension controlled.

**Conclusions:** The results of this survey suggest that a large proportion of subjects had isolated systolic hypertension in Portugal. This problem is more prevalent in males and older people.

### 115 BLOOD PRESURE IN PORTUGAL. DISTRIBUTION, AWARENESS, TREATMENT AND CONTROL OF HYPERTENSION. PAP STUDY

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**Introduction:** Portugal has one of the highest prevalence of strokes in the world. Hypertension is a major cause of cerebrovascular diseases in



most countries. Few epidemiological data about blood pressure in Portugal exist.

**Objective:** To assess the distribution, awareness, treatment, and control of hypertension in a representative Portuguese population sample.

**Methods:** This was a cross sectional household based survey of 5455 Portuguese adults, aged 18–90 years. Standardised techniques were used for BP, height, and weight measurements. Hypertension was defined as blood pressure more than 140/90 mmHg.

**Results:** The preliminary results of this survey showed that the prevalence of hypertension was 40.9%, and of isolated systolic hypertension was 16.0%. The prevalence of individuals with obesity or excess weight was 48.5%. The percentage of hypertensive people aware of their situation and with adequate treatment was small. Finally, only 5.9% of hypertensive people have their hypertension controlled.

**Conclusions:** The results of this survey suggest that a large proportion of subjects with high blood pressure in Portugal is unaware of their blood pressure, and those who know they are hypertensive do not have it treated or controlled. There is considerable scope for improving the treatment and control of hypertension in the Portuguese adult population.

### 116 FOOD HABITS OF A PORTUGUESE IMMIGRANT POPULATION LIVING IN GERMANY

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**Introduction:** There are approximately 130 000 Portuguese migrants and their offspring living in Germany, being the eighth largest immigrant group in the country.

**Objective:** To assess changes in food habits in a sample of Portuguese immigrants living in Germany, to compare food habits of first and second generation immigrants, and to evaluate the change in their body mass index (BMI; kg/m<sup>2</sup>).

**Methods:** Using a structured questionnaire, 60 Portuguese immigrants living in the Giessen area were interviewed. Present and past food habits were assessed by a qualitative frequency questionnaire of food items and traditional dishes. Sociodemographic data, including their migration history, was also collected. Data was collected concerning the immigrants' state of health, weight, and height.

**Results:** The respondents were aged between 20 and 63 years and almost all (92.3%) had lived in Germany for 20 years or longer. Frequency of consumption of most food groups (milk and milk products; eggs, meat and fish; cakes and sweets; fresh vegetables; fruits) had increased, with the exception of pulses, which was maintained, and starchy foods, which decreased. A dramatic increase in the frequency of alcoholic drinks was seen, mainly whisky and vodka. Changes were also observed in meal patterns, namely in the structure and designation of most meals. Women in Germany weighed on average 65.0 kg, compared with 57.0 kg in Portugal, and men 75.0 kg in Germany, compared with 67.0 kg in Portugal ( $p=0.000$  and  $p=0.001$ , respectively). BMI between Germany and Portugal, as expected, increased in both sexes.

**Conclusions:** Changes in food habits occurred for first and second generation immigrants, both in the foods consumed and in the structure of the meals. Many of the traditional foods, dishes, and ways of cooking are still used but less frequently than before migration. The present food habits of this group are somewhere in between those of the Portuguese and the Germans. Most changes are explained by the increase in the purchasing power but some are related to present low availability. With the increased consumption of certain food groups, it is likely that animal protein, total and saturated fat and sucrose also increased, therefore creating an unbalance in the immigrants' diet. Changes in food consumption and a higher BMI at present may constitute an increase in the risk of several chronic diseases.

### 117 EATING DISORDERS BEHAVIOURS: THE RELIABILITY STUDY OF THE PORTUGUESE VERSION OF A SELF ADMINISTERED QUESTIONNAIRE

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**Introduction:** Epidemiological studies on the reliability of self reported information to identify abnormal eating behaviours in a population of young females are scarce in Brazil. The Eating Attitude Test (EAT-26)

and the Bulimic Investigatory Test of Edinburgh (BITE) are questionnaires used to assess eating disorders symptoms. A variety of behaviours may be related with eating problems: the self perception of body weight, the frequency of reading diet magazines, and family influence.

**Objective:** To evaluate the reliability of the Portuguese version of EAT-26, BITE, and other questionnaires related to eating disorders, as part of a multidimensional self administered health and eating behaviours questionnaire.

**Methods:** A test-retest design was used as part of a pilot test conducted in a sample of 60 female public high school students in Rio de Janeiro, Brazil. It was used twice, with an interval of 10 days. All participants provided written informed consent. The EAT consists of 26 items, each one scored on a 6-point Likert scale ("always" = 3 points; "usually" = 2 points, "often" = 1 point; "sometimes", "rarely" and "never"), giving a possible range of 0–78, a score of 20 or more identified cases. The BITE has 30 items (yes = 1/no = 0). Girls with scores of 10 or more were considered as having risk of eating disorders (cases). The family influence on eating behaviours could be estimated through the presence or not of censure of a daughter's weight or dieting. Those analyses were conducted through the  $\kappa$  coefficient. Agreement of evaluation of respondent's satisfaction with body weight was evaluated through the question: "How do you feel about your weight?" Response categories were: "very fat", "fat", "normal", "lean", and "very lean". Magazine reading was assessed with a single item question, "How often do you read magazine articles in which dieting or weight are discussed?". Response categories were: "never", "hardly ever", "sometimes", and "often". This analysis was estimated through the weighted  $\kappa$  statistics.

**Results:** The average female age was 20 years. The main results showed that the reliability of EAT-26, BITE, and the question on self perception of body weight was almost perfect, and gave respectively,  $\kappa=0.81$  (95% confidence interval (CI), 0.59 to 1.0);  $\kappa=0.85$  (95% CI, 0.59 to 0.99) and  $\kappa=0.84$  (95% CI, 0.70 to 0.95). Reliability of family influence and frequency of reading of diet articles was "substantial": respectively,  $\kappa=0.76$  (95% CI, 0.57 to 0.95) and  $\kappa=0.71$  (95% CI, 0.52 to 0.91).

**Conclusion:** The high level of reliability estimated in this study suggests that the process of measurement of eating disorder behaviours among female high school students was adequate.

### 118 PRE-DIAGNOSTIC LEVELS OF SEX STEROID HORMONES, PROLACTIN AND SHBG: RELATIONSHIP TO RISK OF POSTMENOPAUSAL BREAST CANCER

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**Introduction:** High levels of sex steroid hormones (oestrogens and androgens such as testosterone and androstenedione) and prolactin have been suggested to enhance breast cancer development. Low levels of sex hormone binding globulin (SHBG) may indicate high levels of (bioavailable) steroid hormones.

**Objective:** To investigate whether high levels of sex steroid hormones and prolactin, and/or low levels of SHBG, are associated with high breast cancer risk.

**Methods:** About 65 000 women in Sweden have participated in two population-based prospective cohort studies where blood samples were collected at baseline: The Malmö Diet and Cancer Study (MDCS), and the Northern Sweden Health and Disease Study (NSHDS). All samples were stored in biological banks in Malmö and Umeå respectively. Follow up using record linkage with The Swedish Cancer Registry and Regional Tumour Registries yielded 173 incident breast cancer cases in postmenopausal women who had not been exposed to HRT. Levels of oestrone, oestradiol, SHBG, follicle stimulating hormone, prolactin, testosterone, androstenedione, and dehydroepiandrosterones (DHEAs) were analysed in cases and 438 controls. All analyses were performed during a limited time period at one laboratory. Logistic regression analysis yielded odds ratios (OR), with 95% confidence intervals (CI), adjusted for potential confounders.

**Results:** The risk of breast cancer was associated with the highest versus lowest quartiles of estrone, OR 2.58 (95% CI 1.50 to 4.44), oestradiol (dichotomised: high versus low) (1.73; 1.04 to 2.88), and testosterone (1.87; 1.08 to 3.25). High risks, although not statistically significant, were seen for androstenedione (1.58; 0.92 to 2.72) and DHEAs (1.62; 0.89 to 2.72). No strong associations were seen between SHBG or prolactin and risk of breast cancer.

**Conclusions:** High levels of oestrone, oestradiol, testosterone, and possibly androstenedione and DHEAs in postmenopausal women are associated with a high risk of subsequent breast cancer.

### 119 THE EVOLUTION OF BRAZIL'S CHILD HEALTH INDICATORS: 1990–2000

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**Introduction:** During the Cupola meeting on childcare held at the United Nations headquarters in New York, Brazil, along with more than 160 countries, signed the Worldwide Declaration on the Survival, Protection and the Development of Children. During the meeting, government leaders made a commitment to increase the health and rights of children. In 1984, the Health Ministry started basic actions in order to increase health care. To reduce infant death rates they developed Program for the Child. The program focused on these main areas: breastfeeding, growth, development, immunisation, diarrhoea control, oral dehydration therapy, and control of respiratory diseases. Their aim was to increase the quality of child health care services. In 1993, actions directed towards the care of newborns were incorporated in the Program of the Child.

**Objective:** To present the evolution of health indicators from 1990 to 2000 of children under 5 years old in Brazil.

**Methods:** Data was collected from the Health Ministry's information system. The following indicators were selected for analysis: infantile mortality rate, neonatal mortality rate, hospital admissions due to diarrhoea and respiratory diseases, nutritional conditions, and length of breastfeeding.

**Results:** There was a significant reduction of infant mortality (48/1000 live births) to (29.6/1000 live births), representing a reduction of more than 400 000 deaths in children under 1 year of age. The number of cities with mortality rate less than 20/1000 live births increased from 132 to 910 during this period. Mortality decreased more in the urban areas of the south, southeastern, and central/west regions. The study showed an impact on the reduction of neonatal and post-natal mortality. Precocious neonatal mortality represents about 50% of general infant mortality rate. Malnutrition in children under 5 years old reduced from 14.4% to 3.7%. It was observed that the average length of breastfeeding was raised from 5.5 to 9.9 months. There was a significant reduction in hospital admissions due to diarrhoea and dehydration from 17.7% to 5.3%; however, respiratory disease only reduced from 18.7% to 14.5%.

**Conclusion:** Although many advances have been made, a great disparity still exists between infant survival rates among the different Brazilian regions. Rural areas have double the mortality rate of urban areas; however, within larger Brazilian cities, there are pockets of poverty where the infant mortality rate reaches similar levels to the poorest cities in Brazil. These contrasts reflect the social and economic inequalities that restrict access, for part of the population, to basic services such as sanitation, education, and hospital care. Moreover, it is necessary and urgent to improve the quality of assistance given during the prenatal, birth, and post-neonatal periods, so that there will be greater reduction in infant mortality rates in Brazil.

### 120 MORTALITY DUE TO ALCOHOL DEPENDENCY IN BRAZIL

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**Introduction:** Alcohol is socially used worldwide; its misuse is related to increased morbidity and mortality from several causes. Mortality is just the tip of the iceberg of this health and social problem, but mortality data are the most precise available for monitoring purposes.

**Objective:** To measure the impact of alcohol in the mortality from Mental Disorders by sex, age range, and distribution throughout the states.

**Methods:** It is a descriptive study of the mortality from alcohol dependency (AD) (ICD-10 code F10). Mortality data, 1998–2000, from the National Mortality Registry (SIM) and population data from the Institute of Geography and Statistics were downloaded. Excel software was used to calculate proportional mortality ratio by sex for each state, its capital, and the inner cities as a whole. Mortality rates per 100 000 inhabitants were calculated for the capitals. Correlation between these mortality indicators and some sociodemographic and economic variables was sought using Minitab.

**Results:** In the period 1998–2000, the mean annual number of deaths from AD was 12 299 men and 1425 women. This represented 87.2% of male mental disorders (F00–F99) and 0.7% of male all cause mortality

(43% and 0.1% respectively in females). Men died from AD at between 15 and 74 years old (89.3%), mainly between 25 and 64 years (71.8%). Both sexes presented a greater proportional mortality ratio in the inner cities of each state. Proportional mortality from AD was greater in men than in women in every state in Brazil; the mean M:F rate ratio of the capitals was close to 10. The mean rate of the capitals was 4.8 deaths/100 000 men and 0.5 deaths/100 000 women. The southeast region had the highest AD mortality and three of its five capital cities presented rates above the mean. The male AD proportional mortality ratio of the states correlates with the rich/poor ratio, and the male AD mortality rates of the capitals correlate with male homicide mortality, thus pointing to higher dependency where social differences and violence are greater.

**Discussion:** Although mental disorders in Brazil are a far less important cause of death than in several European countries, AD affects mainly young men, thus it represents a premature and an avoidable cause of mortality. The proportion of death from AD is similar to the dependency from psychoactive substances (F10–F19) in Russia in 2000 (84% in men and 47% in women).

**Conclusions:** This study points out the states and capitals where it is most important to implement management techniques for delirium tremens and secondary seizures, and to target educational programmes for the primary unit teams, directed to the identification and involvement of alcohol dependents in recovery programmes.

### 121 PREVALENCE OF REPORTED HYPERTENSION IN PORTUGAL: THE NATIONAL HEALTH SURVEY 1998–1999

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**Objective:** To assess the prevalence of reported hypertension in the Portuguese population and the associated health costs.

**Methods:** Data from the National Health Survey, conducted in 1998–1999 in a representative sample of 18 663 men and 20 977 women aged  $\geq 18$  years. Hypertensive status was assessed by questionnaire.

**Results:** The prevalence of reported hypertension was in 16% men and 25% in women (Mantel-Haenszel adjusting for age group:  $p < 0.001$ ). In both genders, prevalence increased with age to reach 33% of men and 45% of women older than 65 years. In men, prevalence of reported hypertension was highest in the Centro and lowest in the Algarve regions, and was inversely related to education: 19, 17, and 9% for subjects with  $< 6$ , 7–12, and  $> 12$  years of education, respectively. Men with hypertension visited their general practitioner (GP) more frequently, underwent more laboratory analyses and electrocardiograms, and consumed medicines more frequently than non-hypertensive subjects. Hypertensive men also spent more on medicines in the previous 3 months than non-hypertensive subjects: mean (SE) €27.34 (1.02) versus €22.81 (1.02) (adjusted for age, education, and employment status). In women, prevalence of reported hypertension was highest in Alentejo and lowest in the North, and was also inversely related to education: 35, 24, and 8% for subjects with  $< 6$ , 7–12 and  $> 12$  years of education, respectively. As for men, hypertensive women visited their GP more frequently, underwent more electrocardiograms, and consumed medicines more frequently than non-hypertensive subjects, whereas no difference was found regarding laboratory analyses. Hypertensive women also spent more on medicines than non-hypertensive, €27.68 (0.62) versus €24.15 (0.44) (adjusted for age, education and employment status).

**Conclusions:** In Portugal, prevalence of reported hypertension differs greatly between genders and may be related to differential screening procedures. The economic impact of the disease and of preventive measures should be further assessed.

### 122 MEDICINE USAGE AND HANDLING IN A SAMPLE OF PORTUGUESE STUDENTS

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**Objective:** To assess the prevalence of medicine consumption in Portuguese students and related knowledge.

**Methods:** This was a cross sectional study conducted in a sample of 588 students (69% women) from a Health Sciences private University in Portugal.

**Results:** Of the 588 students, 284 (48%) reported they had taken medicines during the previous month. After excluding oral contraceptives, the most frequent drugs were analgesics/non-steroidal anti-inflammatory drugs; drugs for nose, throat or respiratory tract; vitamin/

nutritional supplements; and antibiotics (30%, 16%, 11% and 8% of all reported medicines, respectively). One third of subjects who consumed medicines had obtained them without a medical prescription, and this percentage was higher among pharmacy students (40 versus 25%,  $p < 0.01$ ). Overall, women checked the expiry date more frequently than men, whereas no difference was found between pharmacy students and the others. Most medicine users (>80%) knew the posology, counter-indications, and adverse effects. Multivariate analysis adjusting for age and curricular year showed that women stored medicines away from children more frequently (odds ratio (OR) 2.16, 95% confidence interval (CI) 1.09 to 4.28,  $p < 0.05$ ), and pharmacy students obtained information from the pharmacist more frequently (OR 3.39, 95% CI 1.97 to 5.82,  $p < 0.001$ ).

**Conclusions:** Medicine usage is frequent among Portuguese health students. Pharmacy students tend to obtain medicines directly from the pharmacist more frequently, but their behaviour regarding medicine usage/storage is not different from others.

### 123 TRENDS IN SMOKING PREVALENCE IN PORTUGAL

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**Objective:** To assess the trends in smoking prevalence in the Portuguese population for period 1987–1999.

**Methods:** Data from the three National Health Surveys, conducted in 1987–8, 1995–6, and 1998–9, were used amounting to 55 323 men and 61 702 women aged  $\geq 15$  years.

**Results:** In men, prevalence of current smokers, ex-smokers, and never smokers changed from 33, 19, and 48% in 1987, respectively, to 29, 20, and 51% in 1999, respectively (Mantel-Haenszel adjusting for age group:  $p < 0.0001$ ). Mean age of beginning and the number of cigarettes smoked remained constant throughout the study period. The strongest decrease in smokers was found in the Alentejo region (44 to 31%) and among younger (<35 years) and older (>55 year) subjects, whereas an increase in smoking prevalence was found among subjects aged 35–44 years. The decrease in smoking prevalence was stronger in subjects with a lower educational level (from 31 to 16% for <6 years versus 39 to 34% among  $\geq 12$  years education) and in retired or unemployed subjects (28 to 20% versus 36 to 35% among employed subjects). In women prevalence of current smokers, ex-smokers and never smokers changed from 5, 2, and 93% in 1987 and 8, 3, to 89% in 1999 ( $p < 0.001$ ). Mean age of beginning smoking decreased from 24 in 1987 to 22 years in 1999 ( $p < 0.001$ ) whereas the number of cigarettes smoked remained constant throughout the study period. Prevalence of smoking almost tripled in age group 30–44 years, whereas no increase was found for women aged <25 or >65 years. The strongest increase in smokers was found in Algarve region (5.5 to 11%) and among employed subjects (7 to 13%), whereas no epidemiologically significant changes were found for educational level.

**Conclusions:** In Portugal, the prevalence of smoking has decreased in men, whereas the increasing prevalence of smoking among women is a cause of concern.

### 124 TRENDS IN THE PREVALENCE OF DIAGNOSED DIABETES IN PORTUGAL

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**Objective:** To assess the trends in the prevalence of diagnosed diabetes in the Portuguese population for the period 1987–1999.

**Methods:** Data from the three National Health Surveys, conducted in 1987–8, 1995–6, and 1998–9, amounting to 55 323 men and 61 702 women aged  $\geq 15$  years. Diabetic status was assessed by questionnaire.

**Results:** In both genders, prevalence of diagnosed diabetes remained relatively stable. In men, the prevalence was 4.8, 5.2, and 5.5% for periods 1987–8, 1995–6, and 1998–9, respectively (Mantel-Haenszel adjusting for age group:  $p = 0.44$ ). In women, the corresponding numbers were 6.6, 5.9, and 6.8 ( $p < 0.001$ ). Mean age at diagnosis was 41 years in both genders, and no significant change was found throughout the study period. In addition, no epidemiologically significant changes were found between regions or according to employment status in both genders. Conversely, an increase in the prevalence of diagnosed diabetes was noted among subjects older than 65 years.

**Conclusions:** Compared with other countries, the prevalence of diagnosed diabetes is relatively low in Portugal, and no significant trend was found. The reasons for such stability remain to be assessed.

### 125 TRENDS AND DETERMINANTS OF ALCOHOL CONSUMPTION IN PORTUGAL: RESULTS FROM THE NATIONAL HEALTH SURVEYS 1995–1996 AND 1998–1999

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**Objective:** To assess the trends and determinants of alcohol consumption in the Portuguese population.

**Methods:** We conducted cross sectional studies in 1995/6 and 1998/9 in a representative sample of 0.5% of the mainland Portuguese population, accounting to 49 768 subjects in 1995/6 and 48 606 in 1998/9, aged 15 years or more. Alcohol consumption was assessed by asking if the subjects had consumed alcohol in the previous week and how many drinks of wine/beer/whisky/port wine they consumed on average during that week.

**Results:** Prevalence of alcohol consumption decreased between 95–96 and 98–99 (men: 65.7% versus 64.0%,  $p < 0.001$ ; women: 26.9% versus 26.0%,  $p < 0.001$ ). Among drinkers, the most frequently consumed alcoholic beverage was wine, followed by beer, whisky, and port wine. Also among drinkers, the amount of alcohol and wine consumed decreased in both genders, whereas the consumption of beer, whisky, and port wine increased in men and the increase in the consumption of beer was borderline significant in women ( $p = 0.056$ ). In both genders, subjects aged less than 50 years tended to consume less wine and more beer, whisky, and port wine than their older counterparts. In addition, higher education was related to a higher frequency of alcohol consumption, whereas smoking was related to a lower consumption of wine (odds ratio (OR) 0.67, 95% confidence interval (CI) 0.60 to 0.75 for men; OR 0.75, 95% CI 0.60 to 0.94 for women) and a higher consumption of beer (OR 1.41, 95% CI 1.30 to 1.52 for men; OR 2.10, 95% CI 1.82 to 2.43 for women) and whisky (OR 1.26, 95% CI 1.19 to 1.33 for men; OR 2.61, 95% CI 2.25 to 3.02 for women).

**Conclusions:** The pattern of alcohol consumption is changing in Portugal: the prevalence of drinkers is decreasing, and younger generations are shifting from wine to beer and spirits. Educational level appears to be a powerful mediator in the choice of alcoholic beverage.

### 126 ORAL HEALTH BEHAVIOURS AND DETERMINANTS IN A SAMPLE OF PORTUGUESE STUDENTS

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**Objective:** To assess the practices and attitudes towards oral health in a sample of Portuguese students from Health Sciences, and the effect of psychological status and sweets/sugar intake.

**Methods:** Transverse study conducted in a sample of 388 students (mean (SD) age 21 (3) years, 75% women). Oral health attitudes and behaviours included prevalence of tooth pain/gum bleeding, dentist attendance, and dentifrice and dental floss use. Nutritional intake was assessed by a food frequency questionnaire; anxiety and depression were assessed by the Hospital Anxiety and Depression Scale.

**Results:** Women reported toothache and/or gum bleeding more frequently, attended the dentist more frequently, used dental floss more frequently, and also brushed their teeth more frequently than men. Anxiety was significantly related to increased gum bleeding and dentist attendance. On multivariate analysis adjusting for age and curricular year, anxiety was significantly related to toothache and/or gum bleeding, whereas depression was associated with gum bleeding only; female gender was independently associated with an increased risk of toothache and/or gum bleeding, but also to an increased dentist attendance and a higher frequency of tooth brushing and dental floss use. Finally, no differences were found regarding the consumption of sweets, sugar, or sweet desserts between students reporting toothache and the others.

**Discussion:** Women have better oral health practices than men. Anxiety exerts a deleterious effect on oral health, whereas the effect of dietary intake remains to be assessed.

## 127 PREVALENCE AND RISK FACTORS OF LENS OPACITIES IN THE ELDERLY IN CUENCA, SPAIN

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**Introduction:** Cataract is the pathology responsible for 50% of blindness in the world. In Spain, until this moment, there are no estimations of the prevalence of cataract in people older than 64 years. Even though several risk factors for development of cataract have been identified, the importance of some of them is still controversial.

**Objective:** To estimate the cataract prevalence in Cuenca province, Spain, and to estimate the relationship between cataract and obesity and tobacco smoking.

**Methods:** In a cross sectional study we examined the population >64 years, both in the rural area of Honrubia and in Cuenca city. Demographic information including sex, age, and education level was collected by a structured questionnaire. Physical examination included weight, height, and waist measurement. Lens status was evaluated according to the World Health Organization cataract grading system group.

**Results:** We examined 609 individuals out of the 763 that were invited to participate (79.8% response rate). Lens opacities were 76.1% and 74.7% in men and women respectively ( $p > 0.05$ ). Prevalence of aphakia/pseudophakia was 17.9% and 14.6% in men and women respectively. Older people, after adjusting for multiple potential confounders, showed more prevalence of lens opacities; the three variables associated with aphakia/pseudoaphakia were older age, obesity, and tobacco smoking.

**Conclusions:** Lens opacities prevalence in people older than 64 years in Spain are similar to that in other countries, but aphakia/pseudoaphakia prevalence in Spain is the highest reported until now. Older people, tobacco smokers, and obese people have greater risk of undergoing cataract surgery.

## 128 MEDITERRANEAN DIETARY PATTERN AND THE RISK OF OBESITY: THE SUN STUDY

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**Introduction:** A high fat intake has been associated with an increased risk of obesity. On the other hand, Mediterranean diets have been postulated as cardioprotective, although they usually provide an elevated energy proportion coming from fats.

**Objective:** To assess the role of a Mediterranean dietary pattern on obesity risk to clarify the effect of this diet on overall health and to establish an adequate nutritional policy.

**Methods:** The SUN Project is an open enrolment cohort with currently 13 500 university graduates (University of Navarra alumni, members of professional associations, and other university graduates), recruited and followed up through biennial mailed questionnaires. Diet was evaluated at baseline with a semiquantitative food frequency questionnaire, previously validated in Spain. This analysis included 4866 participants who completed the first follow up questionnaire after excluding 255 subjects with prevalent obesity at baseline (body mass index (BMI)  $\geq 29.5$  kg/m<sup>2</sup>), 131 men with energy intakes  $< 600$  or  $> 4200$  kcal/day and 459 women with energy intakes  $< 400$  or  $> 3500$  kcal/day. New cases of obesity were ascertained through the first follow up questionnaire considering a BMI equal or higher than 30 kg/m<sup>2</sup>. To build a diet score, eight energy adjusted items were categorised in quintiles and the value of the quintile (+1 for the first quintile to +5 for the fifth quintile) was directly imputed for olive oil, fruits, vegetables, fibre, alcohol, fish/shellfish, legumes, and low fat dairy products. Two other items (meat/meat products and glycaemic load) were categorised in energy adjusted quintiles and inversely weighted (+1 for the fifth quintile, +5 for the first quintile). The 10 items were summed, yielding a composite score ranging from 10 to 50 points. Associations between the score and the risk of obesity were assessed using a non-conditional logistic regression model, considering the score as a continuous variable or as a categorical variable ( $< 25$ , 25–29, 30–34,  $> 34$ ), and adjusting for gender, age, total energy intake, physical activity, television viewing, snacking, and baseline BMI.

**Results:** We identified 50 new cases of obesity during a median follow up of 28.5 months. Considering  $< 25$  points in the score as the reference category, the odds ratio (OR) (95% confidence interval (CI)) of incident obesity for those scoring 25–29 points was 1.85 (0.68 to 5.06), 0.94 (0.33 to 2.65) for those with 30–34 points, and 0.90 (0.31 to 2.65) for those with more than 34 points. There was no linear trend among categories of adherence to an a-priori Mediterranean pattern and the risk of obesity ( $p$  for trend = 0.16).

**Conclusions:** We did not find an association between a higher adherence to an a priori defined Mediterranean dietary pattern and the risk of obesity in a prospective assessment of a cohort based on university graduates.

## 129 PHARMACOEPIDEMOLOGICAL APPROACH OF HELICOBACTER PYLORI ERADICATION THERAPIES THROUGH COMMUNITY PHARMACISTS AND THE PORTUGUESE NETWORK OF SENTINEL PHYSICIANS

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**Introduction:** *Helicobacter pylori* is recognised as being a major cause of human gastritis and peptic ulcer, as well as an important risk factor for gastric cancer. There is controversy regarding its therapeutic management.

**Objective:** To identify the therapeutic profile and patterns of use of *H. pylori* eradication therapy among the Portuguese population.

**Methods:** Patients with a prescription associating one or more anti-infective drugs with a proton pump inhibitor or an H2 antagonist were recruited through a panel of 67 randomly selected pharmacies. Data from patients with indications for eradication therapy was also collected through 36 general practitioners belonging to the Portuguese Network of Sentinel Physicians (general practitioners; GPs). Main outcome measures were frequency of the different therapeutic profiles, compliance with eradication therapy, and adverse effects. Compliance with eradication therapy and adverse effects were measured in a treatment cohort recruited through community pharmacies. Descriptive statistics were performed using SAS software (version 8.2).

**Results:** A total of 116 patients were recruited by the GPs, of which 61.2% ( $n = 71$ ) had a confirmed peptic ulcer disease. There were 344 patients recruited through the pharmacies, of which 78.2% had a possible diagnosis of peptic ulcer. Most of the patients were female (62.0% and 54.9% respectively enrolled by GPs and by Pharmacists) with ages over 45 years. Eradication therapies were prescribed to 53.5% of the peptic ulcer patients recruited by the GPs versus 29.4% of patients enrolled through community pharmacies presented with an eradication therapy. Amoxicillin (1000 mg twice daily) plus clarithromycin (500 mg twice daily) and omeprazole (20 mg twice daily) was the most frequent regimen prescribed in both settings. Compliance with eradication therapy occurred in 24.6% of the patients, and 51.2% of them experienced undesirable effects.

**Conclusions:** Management of peptic ulcer disease seems to be different according to the setting where patients were recruited, probably due to the difference in quality of information regarding diagnosis. Nevertheless, therapeutic profiles are similar. Compliance rate of these regimens has to be improved.

## 130 A PERSISTENT INCREASE IN MALE ACUTE URETHRITIS INCIDENCE IN FRANCE

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**Introduction:** At risk sexual behaviours seem to have increased in France, possibly due to the reassuring efficacy of highly active antiretroviral treatments.

**Objectives:** To follow (1996–2003) the trends in incidence of male acute urethritis, a marker of at risk sexual behaviours.

**Methods:** The general practitioners of the Sentinels Network reported, via online computer system, the acute urethritis cases they diagnosed. Age, presence of discharge, sexual orientation, history of sexually transmitted disease (STD), prescription, and results of microbiological determination were registered.

**Results:** Since 1996, the acute urethritis incidence has not decreased to a level that has subsequently been maintained (270 per 100 000 men) and increased to 320 per 100 000 men in 2003. The percentage of homo/bisexual cases was higher than in the general population (11%

versus 4%,  $p=0.001$ ). Homo/bisexual cases were younger than heterosexual cases (34 versus 37 years), more often had a discharge (78% versus 59%,  $p=0.0006$ ), a history of STD (65% versus 32%,  $p=0.0001$ ) and more than two sexual partners (74% versus 38%,  $p=0.0006$ ). Main aetiologies were chlamydia (25%) gonorrhoea (21%), mycoplasma (8%), ureplasma (6%) and trichomonads (3%).

**Conclusion:** This increase in the incidence of urethritis warrants re-adapted prevention measures.

### 131 SMOKING IS ASSOCIATED WITH INCREASED SEVERITY OF PSORIASIS

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**Introduction:** Some reports have indicated that smoking may be a risk factor for psoriasis. However little is known about the relationship between smoking habits and psoriasis severity.

**Objective:** To evaluate the association between cigarette smoking and psoriasis severity.

**Methods:** A study was conducted at the Istituto Dermatologico dell'Immacolata, Rome on 818 psoriatic patients (61.7 % males and 38.3 % females), mean (SD) age 46.8 (16.0) years enrolled during the period 2000–2002. Information on clinical, sociodemographic, and anthropometric variables, smoking habits, and quality of life data were obtained for all patients. The Psoriasis Area and Severity Index was used to assess psoriasis severity. Cumulative logit models were used to evaluate the effect of smoking on psoriasis severity.

**Results:** After careful control for several possible confounders, smoking 20 cigarettes or more daily was associated with a twofold risk of a more severe psoriasis (odds ratio (OR) 2.25; 95% confidence interval (CI) 1.23 to 4.12). Cigarette years, measured as the product of intensity (number of cigarettes) and duration of smoking (years) significantly increased the risk of a more severe psoriasis after adjustment for confounding factors (OR 1.28; 95% CI 1.02 to 1.60, for a 600 unit increase in cigarette years). The negative effect of smoking (cigarette years) for psoriasis was stronger for females (OR 1.75; 95% CI 1.17 to 2.63, for a 400 unit increase in cigarette years) than males (OR 1.18; 95% CI 0.88 to 1.58, for a 700 unit increase in cigarette years).

**Conclusion:** Our results indicate that smoking may be an independent risk factor for psoriasis severity and highlight the importance of smoking cessation in psoriasis.

### 132 LIFESTYLES IN UNIVERSITY STUDENTS

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**Introduction:** One of the main factors determining health is lifestyle, especially in young people, because it is conditions their health in the future.

**Objective:** To gain insight into the health behaviour of university student in Castilla-León, Spain.

**Methods:** The study was conducted using a representative sample of students. This sample was stratified by degree course and randomised. The information was collected via a self report questionnaire comprising different items about smoking, drinking, and eating habits of students and the physical activity they were getting. The sample studied comprised students attending class on the day the study was conducted; 2606 students participated in the study. The study was carried out during December 2002 and January 2003. The Z test and  $\chi^2$  test were used in statistical testing of differences in proportions.

**Results:** The mean (SD) age of the students was 21.5 (2.5) years. 64.5% being women. Of the students, 22.7% claimed to be habitual smokers; 15.8% of men and 27.0% of women (significant difference,  $p<0.001$ ). The mean (SD) age when the students had begun smoking was 15.3 (0.42), and the daily mean (SD) number of cigarettes was 11.3 (2.1). The highest prevalence of smokers were observed in students from teaching (42.9%) and psychology (35.8%). The lowest number of smokers were observed in students from computer studies (6.6%) and physical education (8.4%). Regarding alcohol consumption, 56.9% claimed drinking every weekend. There were no gender differences. The highest proportions of alcohol consumers corresponded to the students from teaching (74.5%) and biology (72.9%), with lowest in the students from veterinary medicine (38.3%), law (42.5%) and physical education (45.5%). With respect to their eating habits, 69.1% reported eating three

full meals a day. Only 27.2 % and 55.4% claimed daily eating of vegetables and fruits, respectively. Regarding physical exercise, 37.2% did not do any at all (significant differences between men (27.7%) and women (43.2%),  $p<0.001$ ). There was significant association between the different habits: tobacco versus alcohol consumption, (odds ratio (OR) 2.5, 95% confidence interval (CI) 1.1 to 5.7.). Tobacco versus no physical exercise (OR 1.6, 95% CI 1.3 to 2.5). No physical exercise versus not eating vegetables and fruits, (OR 2.4, 95% CI 1.5 to 3.8).

**Conclusions:** A high rate of unhealthy behaviours was observed in university students. There was a relationship between different habits. We found a high proportion of alcohol consumers. There were significant differences between men and women with respect to smoking and physical activity, and differences were also observed in the habits between different degree subjects.

### 133 USE OF COMPUTERISED GENERAL PRACTICE DATABASE FOR EPIDEMIOLOGICAL STUDIES IN ITALY: A COMPARATIVE STUDY WITH THE OFFICIAL NATIONAL STATISTICS

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**Introduction:** The Italian College of General Practitioners (SIMG) set up the Health Search Database (HSD) in 1998, and it was primarily aimed at carrying out studies of incidence and prevalence and studies on drug safety and prescription. Data from general practice databases are generally able to supply the denominator for epidemiological studies in a way that questionnaire based studies cannot. However, when considering numerator data the completeness of the information reported varies, and it could be affected by certain patient characteristics.

**Objectives:** To compare primary care morbidity and drug prescription with official national statistics, and to examine how the differences vary across the diseases, and the different therapeutic classes.

**Methods:** We compared morbidity and prescription information obtained from 432 747 patients from the HSD, with either morbidity data from 119 799 individuals selected for the Sixth Health Interview Survey (HIS), or drug prescription data as assessed from the National Drug Monitoring Centre (OsMed), which routinely collects information on all prescriptions issued within the Italian National Health System. Comparing the age and sex specific prevalences within the same timeframe, and the age standardised prevalence assessed difference in morbidity. Drug consumption derived from the HSD was compared with that estimated from the OsMed, by using the DDD/1000 inhabitants/day. We then calculated the pattern of use by dividing the number of DDD/1000 inhabitants/day for each therapeutic group with the total number of DDD/1000 inhabitants/day being prescribed.

**Results:** No differences in morbidity for diabetes and hypertension was found among males, while among females, the HSD age adjusted prevalence per 1000 inhabitants was slightly lower compared with the HIS. The comparison between the HSD and the HIS for chronic obstructive pulmonary disease (COPD) (40.3 versus 55.5 females; 26.0 versus 44.5 males) and gastroduodenal ulcer (19.3 versus 39.8 females; 11.9 versus 31.0 males) showed relevant differences. Drug use in the HSD reported an overall underestimate in comparison with OsMed. However, the general pattern of use across the different anatomical therapeutic chemical classes did not show any relevant variation.

**Conclusions:** The difference between primary care and population morbidity seems generally low for diseases with clear cut diagnosis, whereas for diseases without clearly established diagnostic criteria (COPD and gastroduodenal ulcer) the discrepancy appears more relevant. For drug prescriptions, the general underestimate could be due to the lack of information about paediatric age. However, the similar prescribing pattern reported allows researchers to use information from the HSD to carry out pharmacoepidemiological studies generalised to the whole Italian general practitioner population.

### 134 HEALTH DIFFERENTIALS IN RURAL AND URBAN AREAS: PREVALENCE OF DENTAL CARIES AND MALOCCLUSION IN THE BRAZILIAN CONTEXT

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**Introduction:** During the past decades, the prevalence of dental caries has undergone a strong decrease in most Brazilian towns. This trend has

been attributed to the expanded use of fluoride in toothpaste and tap water, besides a major reform of health services, including the expansion of oral health promotion. However, this reduction was not homogeneous, and deprived population segments presenting high indices of caries remain, indicating increased inequality in the distribution of the disease. With poorer socioeconomic standings and lower provision of health services than urban settings, Brazilian rural populations present a worse pattern of oral health status and access to dental services.

**Objective:** To document urban/rural differentials in the prevalence of caries and malocclusion in Itapetinga, state of São Paulo, Brazil.

**Methods:** We gathered 475 oral examination records, comprising representative samples of 5 and 12 year old children enrolled in urban and rural schools of the town. The survey observed methodological indications standardised by the World Health Organization for the estimation of indices of caries in deciduous (dmft) and permanent (DMFT) teeth, and malocclusion (Dental Aesthetic Index). A questionnaire filled in by their parents reported socioeconomic characteristics, access to dental services, and alimentary and hygienic habits of the children.

**Results:** The prevalence of caries was significantly higher ( $p < 0.001$ ) in schoolchildren in rural areas (dmft = 2.63, DMFT = 2.46) than in their urban counterparts (dmft = 2.04, DMFT = 1.89) for both ages examined. Children in rural areas also presented a worse profile of dental attendance, with their decayed component corresponding to 85.6% of the dmft, and 34.2% of the DMFT. Definite, severe, or very severe malocclusion and orthodontic treatment need were also more prevalent in children enrolled in rural schools (55%) than in their urban counterparts (22%). We also observed high prevalence of deleterious habits (pacifiers and digital sucking), sugar intake, low income, and educational attainment of parents, and low access to dental treatment to children in rural areas.

**Conclusion:** Children living in rural settings are subject to higher levels of dental caries and malocclusion than their urban counterparts. They also presented reduced access to dental services, and an adverse risk factor profile. The targeting of dental services and oral health promotion to these population segments may contribute to an even further reduction of dental caries prevalence in the Brazilian context, alleviating the burden of dental disease on deprived communities.

### 135 ESTIMATING A PREVALENCE PROXY OF DIABETES MELLITUS USING DRUG CONSUMPTION DATA

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**Introduction:** Morbidity data for chronic diseases are poorly documented in many countries. In Portugal, there is no register for chronic diseases, except for cancer. The other classic approach, through prevalence surveys on random population samples, is hardly feasible and very expensive. An indirect method for estimating the prevalence rate of chronic diseases managed with specific drugs, which is based on drug consumption and demographic information, is a less expensive alternative to surveys.

**Methods:** CEFAR has been developing an information system that routinely collects data on drug sales in community pharmacies. A representative stratified random sample of community pharmacies was built based on geographic distribution and pharmacy profit, for a relative error of 5% and a 95% confidence interval. This sample of pharmacies provides weekly electronic information on drug sales. Drug sales estimates at a national level are then calculated using appropriate weights. The World Health Organization ATC/DDD classification system is used to express drug consumption. We used data on the sales of antidiabetic drugs and information on recent population demographic to estimate the consumption of antidiabetic drugs in the Portuguese population for 2002 and 2003.

**Results:** In Portugal the consumption of oral blood glucose lowering drugs rose from 32.9 DDD/1000 inhabitants/day in 2002 to 37.2 DDD/1000 inhabitants/day in 2003. Results showed that sulphonamides and urea derivatives were the most widely used drugs, with glibenclamide being the most used agent. For insulins, the estimates for 2002 and 2003 were 3.5 and 3.8 DDD/1000 inhabitants/day, respectively. The most widely used formulation was the combination of human and isophane insulin.

**Conclusion:** The consumption of oral antidiabetic drugs rose about 13% between 2002 and 2003. However, to improve the accuracy of our results drug use patterns are needed to estimate: (a) the proportion of patients treated with combinations of different oral antidiabetic drugs and (b) the specific average intake of these drugs in Portugal. With these two indicators, the disease prevalence can be estimated more precisely. Our approach does not replace field surveys, but it seems to provide a

less expensive and practical marker of disease frequency and therapeutic attitudes over space and time. In the case of diabetes mellitus, the results obtained seem to be a valid proxy of the disease prevalence.

### 136 SURVEILLANCE OF MEASLES, RUBELLA, AND EXANTHEMA DENGUE IN AREAS FREE OF INDIGENOUS MEASLES AND DENGUE TRANSMISSION: IMPLICATIONS FOR MEASLES ERADICATION

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**Introduction:** Interruption of indigenous measles transmission was achieved in Brazil by the year 2000. The Southern Brazilian State Rio Grande do Sul is free of indigenous dengue cases and rubella incidence is currently 0.2/100 000 inhabitants. Internationally the imported measles cases are more likely to be adult travellers who usually seek private services and practitioners, thus are less likely to be reported. This is similar to the imported cases of exanthema dengue in Rio Grande do Sul, which may have implications for epidemiological surveillance.

**Methods:** This study describes epidemiological and clinical aspects of imported cases of exanthema dengue and suspect cases of measles/rubella in Rio Grande do Sul in 2002 and 2003, as well as the characteristics of the health service, which assisted and reported the case, using data from the National System of Notification (SINAN).

**Results:** The notification rates of suspect cases are about 10/100 000 inhabitants for measles/rubella, equally distributed throughout the year; 11.9/100 000 in 2002 and 2.4/100 000 in 2003 for dengue, most of them during summer. More than 95% of the notified cases were confirmed or discarded by laboratory testing. A quarter of the suspected dengue cases presented exanthema; half were discarded and not tested for measles/rubella. Approximately 74% of the suspect cases of exanthema dengue were adults above 24 years, 54% were men, 28% had 12 or more years of study (a proportion greater than the population average 10.7%); 65% of those cases were notified by public services (95% in outpatient services) a quarter by private services (mostly hospitals) and 6% by the individual with the disease or a relative. Differently, most of the suspected cases of measles/rubella notified were children younger than 15 years; more than 90% of them notified by outpatient public services.

**Conclusions:** The study results indicate the need of including dengue, measles, and rubella in an integrated surveillance of febrile exanthema syndromes with laboratory testing and increasing the attention to adults consulting in the private sector.

### 137 RELATIONSHIP AMONG DENTAL CARIES, SOCIAL DISPARITIES, AND DAILY LIVING IMPACTS IN SCHOOLCHILDREN

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**Introduction:** Dental caries prevalence has been associated with social disparities and impact on daily living activities.

**Objective:** To describe dental caries prevalence and to assess socioeconomic conditions associated with lifestyles.

**Methods:** An observational, analytical census was carried out. Dental caries were measured by the DMFT index; the ABIPEME index measured the socioeconomic condition; and the Oral Impacts on Daily Performance scale assessed impact on quality of life among 513 schoolchildren aged 6–15 years old living in Pinheiro Preto-SC, Southern Brazil. Mann-Whitney, Kruskal-Wallis, Spearman correlation, and  $\chi^2$  tests were performed, with 5% level of significance.

**Results:** Deciduous teeth caries prevalence was 78.1% in 6 year old schoolchildren, and at 12 years old was 72.3% of permanent dentition. Median dmft at 6 years old was 4.40 and 2.01 in the whole studied population. Median DMFT at 12 years old was 2.57, and 1.90 among all participants. Observed average impact on daily living activities was 10.24%. DMFT was higher among participants with poorer socioeconomic conditions ( $p < 0.05$ ).

**Conclusion:** Caries prevalence was low, and the lower socioeconomic condition, the higher the DMFT. Relationship between caries prevalence and daily living impacts was low.

### 138 LIFESTYLE FACTORS AND HOMOCYSTEINE CONCENTRATION IN YOUNG ADULTS IN CARDIOVASCULAR DISEASES PREVENTION

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**Introduction:** Elevated serum total homocysteine (tHcy) is an independent risk factor for cardiovascular diseases.

**Objective:** To investigate tHcy level and in the population of young adults.

**Methods:** tHcy concentration, serum B<sub>12</sub>, serum folate, and red blood cell (RBC) folate were measured in healthy 101 women and 107 men aged 18–40 years. All participants completed questionnaires about factors including health, lifestyle (food rich in folic acid, coffee, and alcohol consumption), smoking, and use of vitamin supplements.

**Results:** The unadjusted geometric mean serum folate was lower in men than in women (5.3 versus 8.5 ng/ml,  $p < 0.001$ ) as was the mean RBC folate (186 versus 332 ng/ml respectively,  $p < 0.001$ ). Men had higher mean serum B<sub>12</sub> vitamin concentration than women (346 versus 290 pg/ml,  $p = 0.003$ ). Mean tHcy was higher in men than in women (9.8 versus 8.3  $\mu\text{mol/L}$ ,  $p < 0.001$ ). Applying sex and age related reference ranges proposed by Rasmussen with the upper reference limit for women aged under 60 years = 7.9, for men under 30 years = 8.1 and for men aged 30 years = 11.2  $\mu\text{mol/L}$ , in the study population 73% of men and 63% of women had tHcy concentration above the upper reference limit. Two multiple linear regression analyses were applied to investigate risk factors for high tHcy concentration: one at the biochemical and one at the lifestyle level. Because all biochemical parameters used were positively skewed, analyses were performed using natural logarithmic transformation of tHcy and dividing plasma folate and B<sub>12</sub> vitamin and RBC folate concentration into quintiles. Folate intake from food rich in folic acid (green leafy vegetables, oranges and citrus juice, cornflakes) was grouped into three categories: consumption of 0–1, 2, and 3 groups of these products at least once a week. In the biochemical model adjusted for sex, tHcy concentration was negatively associated with serum folate ( $p < 0.001$ ). The association between tHcy and vitamin B<sub>12</sub> was also negative, but did not reach statistical significance. Among all lifestyle factors included in the model adjusted for sex, tHcy concentration was inversely associated with vitamin supplementation ( $p < 0.001$ ), and folate intake from food ( $p = 0.04$ ) was directly associated with coffee consumption ( $p = 0.007$ ). Although the strongest lifestyle factor influencing tHcy concentration is vitamin supplementation, among supplement non-users in subjects with a positive nutritional profile (no coffee consumption, high folate intake from diet) mean tHcy concentration was lower than in those characterised by a contrasting lifestyle profile (8.9 versus 11.4  $\mu\text{mol/L}$ ,  $p = 0.07$ ).

**Conclusions:** In Poland the majority of men and over half of women in the young adult population have homocysteine concentrations above upper reference limit. Diet modification in that population is an important element of cardioprotective lifestyle and should be taken into consideration in health promotion. Recommendations of voluntary or obligatory food fortification in folic acid should also be considered.

### 139 HEPATITIS A, A VACCINE PREVENTABLE DISEASE. EPIDEMIOLOGY IN THE REGION OF MADRID, SPAIN

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**Introduction:** Hepatitis A is a vaccine preventable disease with intermediate endemicity in the region of Madrid. Surveillance and seroepidemiological data are important in determining optimal hepatitis A vaccine strategies.

**Objective:** To describe the incidence, the epidemiological patterns, and the risk factors associated with the disease in Madrid.

**Methods:** This was a descriptive study of hepatitis A cases reported to the surveillance system in the region of Madrid (5 423 384 inhabitants) since January 1998 (start of nominal reporting) to December 2003. We analysed the demographic characteristics, risk factors, previous vaccination, and epidemiological link with a confirmed case.

**Results:** During the study period, 700 cases were reported (overall incidence rate 2.15 per 100 000 inhabitants) with the highest rate (3.96) occurring in 2003. Males accounted for 67% of cases. The average (SD) age was 25.5 (14.3) years. Most cases (32%) occurred in 21–30 years of age, followed by 31–40 years (26%). The lowest rates occurred in those <2 years (1%), >60 years (2%), and 11–15 years (5%). Of 700 case patients who were reported during the study period, 263 (37.6%) had some information about risk factors. Of these, the most commonly reported risk factor was household contact with a hepatitis A

case (17.5%), followed by employment or attendance at a daycare centre (16.3%), a history of recent international travel (12.2%), social disadvantaged groups (5.7%), sexual risk behaviour (5.7%), a history of injecting drug use (3.4%), infection with other viral hepatitis (0.4%), and contact with a contaminated food (0.4%). Of the cases, 38.4% had no identified source of infection. Seven cases were vaccinated, but five of them only in the context of an outbreak a few days before the onset of symptoms.

**Conclusions:** Overall, 65% of cases occurred in adults up to 20 years old. The low incidence, even in the most affected age groups, contributes to a rising number of susceptible adults. These results are consistent with those of seroepidemiological surveys, showing that the number of susceptible people increases steadily with age. In absence of universal vaccination, the epidemiological features of hepatitis A in Madrid support the strategy of emphasising vaccination in daycare centres to decrease the disease burden of hepatitis A in the community.

### 140 A CASE-CONTROL STUDY OF CHILD SURVIVAL IN SHANTYTOWN AREAS (FAVELAS) OF RIO DE JANEIRO

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**Introduction:** A feature of contemporary urban demographic experience in the developing world is surplus mortality among children who live in disadvantaged areas of large cities. The increased risk of mortality among populations aged less than 5 years is particularly prominent in shanty town areas (favelas) of Rio de Janeiro, Brazil. Populations are typically categorised as 'vulnerable' in areas where they are made vulnerable by social conditions. It is important to ascertain to what extent this increased risk of mortality can be explained by socioeconomic factors such as education, income, family structure, and region of residence.

**Objective:** This study investigated this question using demographic data from the Brazilian Censuses of 1991 and 2000.

**Methods:** We used the epidemiological technique of a case-control study, defining the 'cases' as those mothers, aged 15–29 years, who had lost at least one child, and 'controls' as mothers of the same age group who had had children born alive, and for whom all children are still alive; analysis by relative risk methods then gave estimates of these differentials. The literature that has analysed this issue in recent decades has focused primarily on income, education, and the associated risk of child mortality. In the present analysis, in addition to these factors, other influences such as the lack of social capital were also included, which were measured by family structure and residence in favelas. A child mortality indicator was constructed using the proportion of young mothers (15–29 years) that had lost at least one child born alive, and evaluated the relative importance of each factor: family income per capita, maternal education, structure of family, and place of residence (such as shanty town areas), with multivariate statistical analysis using logistic regression (Logit) techniques.

**Results:** The case-control study showed that residence in a favela and lack of maternal education played a major role as determinants of mortality at young ages. Families in which mothers were the head of the family and those with a lower median level of income were also significant determinants of child mortality. A logistic model estimated with first order interactions and an adjustment  $\chi^2$  probability of 0.89 showed that living in a favela and in a household with a female head were significant at the 95% level for increasing the risk of mortality (even after controlling for the effects of other socioeconomic factors). All levels of education were also significant in their ability to affect the risk of mortality. Education and living in a favela thus appears to play a critical role in explaining the risk of infant mortality among the younger women in the sample.

### 141 INCIDENCE OF SUDDEN INFANT DEATH SYNDROME IN NORTHERN ITALY, 1990–2000

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**Introduction:** Sudden infant death syndrome (SIDS) is defined as the sudden death of an infant under 1 year of age, which remains unexplained after the performance of a complete post-mortem investigation, including an autopsy, examination of death scene, and review of the case history. Epidemiological studies carried out in most of western countries have provided evidence for some risk factors for this disease (prone sleeping position, passive smoking, overheating during sleeping, etc.), but in Italy the incidence of SIDS is not known.

**Objectives:** The aim of the present study was to estimate the incidence of SIDS between 1990 and 2000 in Lombardy, northern Italy (an area which accounts for 14% of all Italian births), and to provide basic information for a subsequent comparison of the SIDS incidence after the risk intervention campaign still ongoing.

**Methods:** A retrospective epidemiological study was carried out using every death of resident infants occurring between 7 days and 1 year of age recorded by the local health districts mortality registries of Lombardy, for the period 1990–2000. Causes of death were coded according to the Ninth International Classification of Diseases (ICD9). First, we considered all deaths classified as SIDS (ICD9 798.0). Then, based on the hypothesis that this ICD code is often not used for the diagnosis of sudden death in infants, we also considered deaths classified with other codes that might reasonably include SIDS.

**Results:** A total of 108 SIDS deaths were observed in the study period with an overall SIDS rate of 0.13 per 1000 live births. The annual incidence of SIDS during the study period decreased significantly by 60% from 0.20 to 0.08 deaths per 1000 live births. When “possible SIDS deaths”, not directly labelled as SIDS, were also considered, the rate of SIDS reached 0.54 per 1000 live births.

**Conclusions:** SIDS has a low incidence in northern Italy, even when deaths not directly labelled as SIDS are considered. Nevertheless, SIDS remains the most frequent single cause of death during the first year of life after the early neonatal period. These results provide the necessary baseline for a meaningful comparison of SIDS estimates after the intervention campaign in Lombardy. The main limitation of this study stems from the use of death certificates as the only source of data. The diagnosis of SIDS is complex and should always be based on autopsy. In the population under study, an autopsy was requested in approximately 70% of cases eventually diagnosed as SIDS.

To correct for the likely underestimation of this incidence, we are planning a study about validation of SIDS and causes that might hide a SIDS.

#### 142 STUDY COMPARATIVE OF THE PREVALENCE OF ATOPIC DERMATITIS IN SPAIN BASED ON THE STUDY ISAAC PHASE III

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**Introduction:** Atopic dermatitis is the most common dermatosis in infancy; representing 20% of dermatological conditions. The morbidity and costs for society and for the patients are increased.

**Methods:** This was a study on 32 861 children aged 6–7 years old at nine Spanish centres through the cross sectional study ISAAC Phase III carried out in Spain. The prevalence of atopic dermatitis and the confidence interval (95%) were calculated between the different centres throughout Spain, which have participated in the study using  $\chi^2$  with 95% confidence interval (CI).

**Results:** The highest prevalence was identified in the north of Spain. San Sebastian presented 38.54% (CI 35.32 to 41.86), La Coruña 36.73% (30.74 to 34.77), and Bilbao 32.80% (31.11 to 34.53) prevalence. The lowest prevalence of atopic dermatitis in the child was identified on the Mediterranean coast; Barcelona showed a prevalence rate of 25.16% (23.59 to 26.80), Cartagena 29.58%, Castellon 30.41%, and Valencia 31.87%. Pamplona, Asturias, and Madrid presented intermediate prevalences. When we applied the  $\chi^2$  test, we observed statistically significant differences between them.

**Conclusions:** Different prevalences were clearly identified. The North of Spain showed a higher prevalence than the Spanish Mediterranean coast, with an intermediate prevalence in the centre.

#### 143 PARENTAL SMOKING AND RISK FOR ASTHMA, RHINITIS, AND ATOPIC DERMATITIS IN CHILDREN OF VALENCIA, SPAIN

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**Introduction:** Some studies<sup>1,2</sup> have indicated that parental smoking aggravates asthma and increases bronchial responsiveness in children with established disease. It is less clear whether exposure to environmental tobacco smoke enhances sensitisation to allergens in children, thereby causing childhood asthma.<sup>3</sup>

**Methods:** This was a study on 3403 children of 6–7 years and 3138 children 13–14 years of age, who were studying in 80 schools in Valencia, Spain. A cross sectional study using the validated questionnaire of the International Study of Asthma and Allergy in childhood (ISAAC) Phase III was carried out. The prevalence and the risk were calculated (odds ratio) from those symptoms compatible with atopy (asthma, allergic rhinitis and atopic dermatitis) among children compared with non-atopic children.

**Results:** The risk of asthma in children 6–7 and 13–14 years if their mothers smoked was 1.06 and 1.14 respectively for boys, and 1.13 and 1.32 respectively for girls. The risk of atopic dermatitis in boys 6–7 and 13–14 years whose mothers smoked was 1.12 and 9.17, respectively. The risk of asthma in girls aged 6–7 years was 1.51 if their father smoked.

**Conclusions:** If father smoked, a risk for asthma was observed only in children 6–7 years. No relationship was found between parental smoking and allergic rhinitis. Maternal smoking may be a risk factor for asthma and atopic dermatitis in children 6–7 and 13–14 years of both sexes.

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#### 144 THE ROLE OF TOBACCO SMOKING IN THE PREVALENCE OF ATOPIC DERMATITIS IN SPAIN: ISAAC PHASE III

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**Introduction:** Despite atopic eczema being a common disease, knowledge of its causes is very low. However, environmental micro- and macrofactors are involved in its aetiology.

**Objective:** To assess the role of tobacco and its association with atopic eczema in children 6 and 7 years old in Spain.

**Methods:** A total of 29 772 children aged 6–7 years, in eight Spanish centres coordinated from Cartagena and following the work protocol of ISAAC Phase III were studied. Every centre followed the same protocol in the same time period, with close coordination between them. The children’s parents, previously contacted through the schools, completed the questionnaire used. All ethics rules were followed. This cross sectional study had atopic dermatitis as dependent variable, and as independent variables had tobacco habits in the familial environment of the children, children’s age, and centre that the child attended. Absolute and relative frequencies were used, with odds ratio (OR) tobacco habit in the development of dermatitis and OR adjusted to the variables given above. Confidence intervals (95% CI) and Wald test were used.

**Results:** From the children studied, 7706 (31.6%) showed atopic dermatitis, 16 652 did not show this pathology (68.4%), and 5414 did not respond; the last group was therefore excluded. Tobacco smoking was present in the familial environment of the child in 2941 cases (30.4%), while 6415 (66.3%) declared that nobody smoked at home, and 321 questionnaires did not answer this question. The non-response rate to this question was highest in Valencia (4.4%) and in Cartagena (4.4%), while Barcelona showed the lowest prevalence to the



non-response (1.6%); remaining centres had intermediate levels. Tobacco smoking was highest in San Sebastian (38.4%), and lowest in Barcelona (22.2%). We only analysed those questionnaires that answered this question. When we studied the role of familial tobacco smoking and the development of dermatitis, we obtained an OR of 1.0 (95%CI 0.9 to 1.2). When we valued the intensity of the habit, dichotomising among a single family member who smoked and more than one, the results did not show changes.

**Conclusions:** We did not identify in the study a higher risk of atopic dermatitis in children with a familial environment of tobacco consumption.

#### 145 THE IMPACT OF AIDS ON THE HEALTH SERVICE OF MAPUTO, MOZAMBIQUE

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**Introduction:** HIV is prevalent in Mozambique, where an estimated 12% of the adult population was affected in 2002.<sup>1</sup>

**Methods:** In order to assess the impact that HIV/AIDS has on the health services of Mozambique, this work was conducted in the Central Hospital of Maputo, by reviewing all the cases where an AIDS diagnosis was registered throughout the year 2002, and by making an analysis of the clinical profile of this particular group of patients. Means and standard deviations were used to describe the quantitative characteristics, and relative frequencies and confidence intervals were used to describe the qualitative characteristics ( $\chi^2$ ,  $p \leq 0.05$ ).

**Results:** The services most affected were Internal Medicine, Dermatology, and Accident & Emergency. The least affected service was Oncology. The main causes for consultation were illness with diarrhoea, tuberculosis, and breathing problems, malaria, and dermatological diseases. The most frequent signs were malaria, tuberculosis, breathing problems, and skin and digestive diseases. The main risk cause was sexually transmitted diseases.

**Conclusions:** The impact that AIDS has on the health services of Maputo is significant. Most patients request for health services only when the disease is quite advanced. Transfusions do not appear to be of any great significance among the risk factors of becoming infected with HIV in Maputo.

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#### 146 SMOKING AMONG NURSING STUDENTS FROM THE CITY OF PORTO

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**Introduction:** Nurses have the potential to influence clients' behaviour and public policy concerning tobacco use.

**Objective:** To evaluate current smoking habits and degree of nicotine dependence among future nurses attending nursing school in Porto, Portugal.

**Methods:** A self administered questionnaire was applied to all students (first to fourth year) attending the three public nursing schools in the city during the academic year of 2002/2003 (n=846). Additionally, smokers were asked to answer the Fagerström Test for Nicotine Dependence.

**Results:** A total of 690 students participated (81.4% participation). The percentage of smokers defined was 12.4%, being higher in males than in females (males 15.1%; females 11.8%). The differences were not statistically significant. The risk of being a smoker was found to be higher among students with smoking parents, compared with students who had non-smoking parents. The risk of being a smoker for those having a smoking mother was three times higher compared with students who had non-smoking mothers. This association is statistically significant (odds ratio 3.25; 95% confidence interval 1.78 to 5.923;  $p < 0.001$ ). For 65.9% of the smokers, the smoking habit had already started before the students started their course. Although there are no statistically significant differences in the consumption of cigarettes among students attending the 4 years of the course, a

tendency was found for students to increase the number of cigarettes smoked per day as they progressed in the course. Of all smokers, 55.3% revealed "no or small dependence to nicotine", 35.3% were classified as "dependent", and 9.4% "strongly dependent". There were no cases of smokers "very dependent" to nicotine, according to the Fagerström Test. No statistically significant association was found between the level of consumption and the analysed variables, with the exception of the current number of cigarettes smoked per day.

**Conclusions:** A quantitative approach was chosen in order to try to create a knowledge base that can be useful for future studies and to the implementation of policies to reduce smoking among health professionals. For the majority of the smokers (65.9%) the smoking habit was initiated before entering the school. How, when, and why this group of future health professionals has acquired smoking habits are three questions that would require appropriate clarification. Referring to smokers, it is not yet known which variables will lead to different degrees of dependence to nicotine. The above results can be used as the starting point in the definition of strategies to prevent smoking within the future health professionals.

#### 147 RELATIONSHIP BETWEEN PATIENT SATISFACTION WITH CARE AND PATIENT AGE: APPLICATION OF B-SPLINE TO MULTIPLE LINEAR REGRESSION

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**Introduction:** Numerous studies on assessment methods of hospitalised patient satisfaction with care have been carried out. All of them underline the fact that sociodemographic variables are associated with satisfaction score. Despite the fact that patient age is one of the most studied factors, the relationship between age and satisfaction is, however, controversial. Most authors agree on the strength and the form of the relationship, showing that the oldest patients are the most satisfied. Recent studies, however, suggest a more complex relationship between patient age and satisfaction score: a drop in the satisfaction scores beyond a certain threshold was observed.

**Objective:** To define the form of this relationship through a regression model using B-spline.

**Objectives:** To determine whether the relationship is a linear or a constant piecewise function and to determine whether one or many thresholds exist.

**Methods:** Data come from a study that was conducted in a French teaching hospital; 498 patients aged 18 to 95 years filled out a validated questionnaire on satisfaction with care (EQS; échelle de qualité des soins). The statistical method used for the analysis enabled us to search for one or many thresholds, and to choose between a linear or a constant piecewise function.

**Results:** The mean (SD) age of the 498 patients was 57.2 (21.1) years. The average overall satisfaction score was high, 83.2 (14.3), varying from 25 to 100, with a median of 86.7. The minimum BIC was reached in a model using a linear function with two slopes. The model associating two constant functions was rejected. Our results show an optimal fit when age is considered as a continuous variable. The selected model reveals the existence of a minimum corresponding to a point at approximately 58 years. Only one threshold, beyond which the satisfaction score decreases, has been identified.

**Conclusion:** The relationship between age and satisfaction is linear and positive up to about 60 years, and then becomes negative. Should these results be confirmed by other studies, the existence of such a threshold would raise the issue of fitting methods and interpretation of healthcare satisfaction questionnaires used to survey old people.

#### 148 SOCIAL STRATIFICATION, INTRA-URBAN DIFFERENCES, AND MORTALITY

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**Introduction:** The coefficient of infant mortality constitutes a relevant indicator of the population's health, as it expresses the level of health and quality of life of a society. The study of deaths considered avoidable and analysis of these, based on socioeconomic differentials in populations, are important indicators for implementation and evaluation of public health policies.

**Objective:** To establish a comparison between spatial distributions of deaths selected by cause in the years 1996-2000, considering socioeconomic differentials.

**Methods:** The research follows the design of an ecological study, using information zones (IZs) of Fortaleza county as the unit of analysis, stratifying according to the variables income and education, considered to be determinant of population's living conditions. Health indicators such as proportional infant mortality (PIM), the standard mortality coefficient (SMC), and proportional mortality ratio over 50 years of age were calculated for each IZ.

**Results:** The population, in 2000, demonstrated growth of 8.9% compared with 1996 and the three strata with best socioeconomic conditions presented growth slightly superior to that of the three strata with worst conditions. PIM dropped in 2000 compared with 1996, however intra-urban social differences became more accentuated. SMC showed a reduction in the strata of higher income and better schooling, despite revealing an increase over the period.

**Conclusions:** The study showed that Fortaleza, Ceará, is strongly marked by large socioeconomic inequalities. Most of the population resides in regions characterised by low levels of income and schooling, which led this portion of the population to show, in general, worse health indicators. Most of the indicators studied demonstrated conditions that in general, worsened according to socioeconomic status and over time. This became clear, for example, in the relationship with PIM and proportional mortality ratio over 50 years of age. This methodology creates prospects for identification of areas with similar living and health conditions and may therefore contribute to definition of priorities in the reorganisation of services in harmony with the proposal of the Unified Health System to organise services on a territorial basis.

#### 149 HEALTH CARE FOR CHILDREN IN SCHOOL AGE AND THE QUALITY OF MEDICAL CARE

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**Introduction:** This work aimed at studying the attention given to children in school age health to investigate what medical consultation is performed within the health institutions, and what quality of medical care do lower class children get at public institutions. The proposal was to take some conscious distance from conceptual debate on medical attendance and its possibilities in order to get a better approach of reality, of everyday activities in public health units, and of the medical practices directed towards children of school age.

**Methods:** The study was produced in Campinas, Sao Paulo state, a city with one million inhabitants, chosen for its high standards of living and for hosting two major medical schools. The analysis was based upon official data collected at city public health services related to all attendances to children from 5 to 14 years, between 1991 and 2001.

**Results:** The coverage of medical consultations rose progressively from 22.85% in 1991 to 36% in 2001, at a rate of two consultations/year in 2001. This means that children of school age have more access to health care, so we then investigated what quality of that medical attention they had been given. Only 15% of the consultations were appointments; the majority of them consisted of immediate aid to acute complaints, without any follow up. Visual acuity tests were applied to less than 3% of the children. On the other hand, laboratory tests were requested for 41.38% of the children between 5 and 9 years and for 34% of those between 10 and 14 years. Nevertheless, more than 13% of the patients were directed to specialists, among which neurology was the most requested (25%), which contradicts the epidemiological and clinic knowledge on paediatric diseases.

**Discussion:** The results point to a necessity of further research in order to reveal the actual medical practice in public health services, if there is any intention of improvement. It is possible to infer that the low rate of returning appointments, the absence of actions whose efficacy is more than proven (such as the Snellen's chart), the excess of lab tests and referrals reveal the ideals under medical practice; a plausible hypothesis is that the physicians, when in contact with lower social classes at public institutions, keep in mind a model of medical aid based upon complaint procedure standard, thus fitting children into that standard. Finally, it is possible to say that children in school age are getting access to medical care, but the attention given lacks quality.

#### 150 THE MEDICALISATION OF HEALTH CARE FOR CHILDREN OF SCHOOL AGE

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**Introduction:** The medicalisation of learning processes and of behaviour consists of attributing school failure and behaviour disorders to individual diseases, disregarding school itself, the society, and the political and economic environment. In this process, which has become very common in Brazil nowadays, the number of neurological dysfunction diagnoses of all types used as excuses for social problems is marked.

**Objective:** To quantify this process within the public health network.

**Methods:** The study was produced in Campinas, Sao Paulo state, a city with one million inhabitants, chosen for its high standards of living and for hosting two major medical schools. The analysis is based upon official data collected at city public health services related to all attendances to children from 5 to 14 years, in 2001.

**Results:** The results presented must be considered in a wider context: only 36% of the children in school age were attended by public hospitals; the majority of the attendances fitted the complaint procedure standard, without patient follow up and with excessive direction to specialists (13%). Despite clinical and epidemiological knowledge on neurological diseases in paediatric age, the data revealed that: (a) neurology is the most requested speciality by paediatricians (25% of referrals); (b) 73% of the cranial radiographies were performed on patients between 5 and 14 years old, while only 27% related to children under 4 years, exactly the population segment to which most attendances at public health services relate to; and (c) 79% of electroencephalograms produced by public health services for the paediatric population were performed on 5–14 year old children; whereas (d) in contrast, only 17.77% of paediatric patients in physiotherapy for neurological pathologies were from 5 to 14 years old.

**Conclusions:** The analysis of the most frequently required procedures by neurologists shows excessive referral of children of school age to that speciality and reveals the alarming proportions of the medicalisation process. The results vigorously oppose the neurological knowledge. The majority of the EEGs and cranial radiographies performed with children from 5–14 years are motivated by complaints related to behaviour and learning; the hypothesis of special attendance to neurological paediatric patients (who need more accurate and constant investigation) is ignored by the contrast with low rates of physiotherapy for neurological pathologies, a procedure which is prescribed more carefully, only for children who really need it. This medicalisation provokes misdirection of public health care resources because of unnecessary expenses in attending normal children and the multiple implications for the lives of every child affected.

#### 151 ASSESSMENT OF SELF EFFICACY IN THE PREVENTION OF HIV INFECTION AMONG YOUNG PEOPLE/ADULTS OF MAPUTO, MOZAMBIQUE

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**Introduction:** An adequate level of knowledge regarding HIV/AIDS is not enough on its own to motivate people to adopt sexual practices that are healthy for the individual.<sup>1</sup>

**Methods:** A questionnaire including open and set questions<sup>2</sup> was carried out among a group of university students from Maputo in November 2002. All the characteristics were described by using means and standard deviations for the quantitative characteristics and using relative frequencies and a confidence interval for the qualitative characteristics ( $\chi^2$  test,  $p \leq 0.05$ ).

**Results:** Few people used a condom if they were drinking alcohol. Most women would insist on using a condom, even though their partner preferred not to; yet only 58.33% (confidence interval 30.21 to 82.83) would deny having sexual relationships if their partner refused to use a condom. Most of the people questioned would not be capable of abstaining from sexual relationships before marriage. Furthermore, only 20% of both sexes felt they would be able to talk about sex with their parents.

**Conclusions:** In the group studied, there was a limited capacity observed of the individual having much self influence when faced with certain situations that involved a risk of becoming infected with HIV/AIDS.

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### 152 HEALTH INEQUALITIES IN CORONARY PATIENTS IN SOUTHERN EUROPE

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**Introduction:** The relationship of socioeconomic status, adverse lifestyle, and higher mortality to coronary heart disease (CHD) is well known. However, data on the differences in risk factor control and treatments in CHD secondary prevention between different socioeconomic strata are scarce.

**Objective:** To analyse the differences in risk factor control and preventive drug therapy received by CHD patients depending on their socioeconomic status.

**Methods:** This analysis is embedded in a clinical trial aimed at analysing the efficacy of an intensive programme of secondary prevention in primary care physicians compared with the usual care. CHD patients seen in 23 Spanish primary healthcare centres were studied. We classified the socioeconomic status by measuring both educational level and social class based on occupation (adapted to Spanish population from British National Registrar). Risk factors and treatment received for secondary prevention were also collected.

**Results:** The socioeconomic data were completed by 783 of 1022 patients (76.6%) recruited for the clinical trial. Mean (SD) age was 64.2 (9.0) years and 74.9% were men. The proportion of upper education level participants was 3.3%, middle 9.4%, and lower 87.2%. The proportion of patients in social classes IV–V was 79.3%, 12.5% were in social class III, and only 8.2% were in the highest social classes I and II. Patients in the lower and middle educational levels more frequently had blood pressure levels <140/90 mmHg than those in the higher level (55.4%, 48.1%, and 26.9%, respectively;  $p=0.04$ ). We also found significant differences in the percentage of smokers (upper level 23.1%, middle level 31.1%, and lower level 15.9%, respectively;  $p=0.004$ ). Patients in the highest social classes III–II were significantly more likely to be smokers than those in classes III and IV–V (26.2%, 24.7% and 16.8%, respectively;  $p=0.05$ ). No significant differences in the percentage of overweight, lipid control, fasting glycaemia or drug therapy used in secondary prevention depending on socioeconomic status were found. No differences in the control of risk factors or in the treatment received by patients with previous history of hypertension, diabetes, or hypercholesterolaemia were found.

**Conclusions:** No differences in secondary treatment were observed among socioeconomic status in CHD patients. Patients with middle and lower educational level achieved better blood pressure control, and those with higher educational level and higher social class were more frequently smokers.

### 153 COMPREHENSIVE PUBLIC HEALTH IMPROVEMENT PLAN FOR VALLECAS: A NEW EXPERIENCE WITH CITIZEN PARTICIPATION

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**Introduction:** In 2000, the government of the community of Madrid and the Vallecas Residents' Association agreed on an investment plan for this district of Madrid for the period 2001–2005 (law 17/2000 of 27 December 2001), including financial provision, known as the Comprehensive Public Health Improvement Plan for Vallecas. The priority lines of action of the plan agreed on with the residents were established as follows: (a) awareness of morbidity and mortality patterns; (b) health promotion and health education programmes; and (c) study and control of environmental and nutritional risk factors. Vallecas is a health district belonging to Health Area 1 of the community of Madrid, with 295 231 inhabitants (2001 Census); public health programmes will have a major impact on a population of this size.

**Methods:** This is a comprehensive approach to public health, with citizen's participation. Teamwork: the Coordination Committee of the Comprehensive Public Health Improvement Plan for Vallecas decides on the programmes to be carried out and is made up of the Technical Team (consisting of professionals from the Public Health Institute, guest professionals from other institutions, and organisations working in Vallecas) and residents in the district. No activities or resources are to be duplicated.

**Results:** The plan has resulted in: (a) an analysis of the health situation: demographic studies, mortality studies, studies on morbidity due to communicable diseases, and analysis of health related risk behaviour; (b) identification and geo-referencing of environmental risk elements: a

pilot study for monitoring of exposure to environmental pollutants using biomarkers; (c) a survey on environmental risk perception by the population; (d) qualitative research into the health needs perceived by the population; (e) processing of regional health survey data referring to Vallecas; (f) tuberculosis control by directly observed treatment, or supervised by a Red Cross mobile unit; (g) a comprehensive approach to smoking; (h) attention and channelling of population's requirements; and (i) dissemination of information through a website ([www.madrid.org/sanidad\\_planvallecas](http://www.madrid.org/sanidad_planvallecas)), forums, publications, and participation in health councils.

**Conclusions:** Teamwork, a comprehensive approach to public health, and close collaboration with the people our work is geared towards, backed by resources, enable activities to be carried out for improving the population's health. This is a reality, not just a theory.

### 154 REGULATION OF MEDICINES FOR THE PREVENTION OF EARLY ORAL EXPOSURE TO ETHANOL

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**Introduction:** Ethyl alcohol, known popularly as alcohol, is a versatile substance; its physicochemical properties and other effects allow a wide range of applications and uses in several sections of the society. Throughout its centuries of consumption it has been incorporated into lifestyles and became part of many cultures in the world. The chronic use of ethanol results in pharmacodynamic and pharmacokinetic tolerance, causing physical and mental dependence. Researchers denote a positive correlation between early oral exposure to ethyl alcohol and its chronic use.<sup>1–3</sup>

**Objective:** To identify medicine regulations adopted to prevent early oral exposure to ethyl alcohol.

**Method:** A survey of national and international databases of public domain was performed in 2001 through the internet using related keywords: alcohol, regulation, policy, medicine, drug.

**Results:** Only one resolution fitted the regulation of medicines for the prevention of early oral exposure to ethanol, resolution RE no. 543/01 (DOU 20.04.2001), which prohibits presence of alcohol in paediatric medicines that claim to stimulate appetite and growth, or are tonics, or complements of iron and phosphates. Starting from 18 July 2001, such medicines cannot have ethyl alcohol in their formulation in Brazil.

**Conclusions:** More studies are necessary to improve regulations for the prevention of early oral exposure to ethyl alcohol. Caution is necessary to evaluate the feasibility of medicine formulations without this component.

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### 155 PREGNANCY IN ADOLESCENCE, ASSOCIATED FACTORS, AND PERINATAL RESULTS AMONG POSTPARTUM WOMEN IN RIO DE JANEIRO, BRAZIL

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**Introduction:** Social and economic inequality has been identified as an important differentiation factor for the health condition of populations. For mothers and children, the differences are especially marked. From the pregnancy period, medical attendance reproduces social inequities that remain until childbirth and the puerperium, and involve the delivery of health care during childhood. The problem is worse for those pregnancies that occur in adolescents, where poverty is added to a lack of emotional structure for the young mother, who is frequently supported neither by the child's father nor by her own relatives.

**Objective:** To compare socioeconomic characteristics, prenatal assistance, and lifestyle of three groups of mothers: one composed of adolescents (<20 years) and the others of 20–34 year old women, classified according to past experience of pregnancy during adolescence.

**Methods:** A sample of 8874 mothers, excluding the mothers of twins and those aged 35 years or more, interviewed just after delivery, was selected from public and private hospitals in the city of Rio de Janeiro, Brazil. To verify the hypothesis of homogeneity of proportions,  $\chi^2$  and linear regression tests were used.

**Results:** Comparing the three groups, the most disadvantaged conditions were found among the 20–34 year old mothers with a history of pregnancy in adolescence. These women had the lowest educational level, more often smoked and used illegal drugs during pregnancy, had the lowest number of prenatal appointments, and received less support during childbirth. In this study, prenatal assistance has proved to be an effective compensatory policy for the prevention of prematurity and low birth weight, especially among adolescent mothers. Other damages from a precocious pregnancy have been discussed in the literature, such as a larger risk of low birth weight, premature babies, and infant and perinatal deaths. The strongest contributing variables to the determination of the low weight of these women's children were low maternal age, not living with the newborn's father, few prenatal appointments during pregnancy, arterial hypertension during pregnancy, going to hospital without relatives' support, prematurity of the newborn, and, finally, going to public maternity units or to maternity units that have a special convention called the "SUS", (Unique Health System, created by the federal government).

### 156 PLAYGROUND INJURIES IN CHILDREN UNDER 17 YEARS OF AGE PRESENTING TO AN EMERGENCY MEDICAL DEPARTMENT

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**Introduction:** Childhood injuries are a major source of morbidity in industrialised countries, and many of these injuries occur on playgrounds. The demographics of playground injuries occurring in Irish children however have not previously been adequately described, as reflected by the paucity of publications in the medical literature.

**Objectives:** To provide up to date demographic information on the nature of these injuries in an Irish population.

**Methods:** Data were collected on all children (<17 years of age), injured in playground activities, presenting to an emergency medical department of a major teaching hospital in Ireland over a 6 month period. The data, which included activity, age, sex, mechanism, type, site, and management were entered into a specially designed database.

**Results:** Retrospective analysis was performed on 23 000 charts, and 81 children, none of whom had been wearing any protective gear, were found to have presented with a playground related injury. Swing injuries presented most frequently (26%), followed by slide (24%), climbing frame (22%), and bouncy castle (16%) injuries. Saturday (9%) and Sunday (11%) were the least frequent days of injury presentation. Swing injuries presented proportionately more frequently in girls than boys ( $p=0.04$ ), and there was a strong trend towards significance of a higher frequency of presentation of climbing frame injuries in boys compared with girls ( $p=0.07$ ). The most frequently injured age category was the 5–6 year old category, accounting for 35.8% of the injuries. The most frequent mechanism of injury was fall (88%), followed by collision with other persons (6.2%). The most frequent general site of injury was upper limb (64%), followed by lower limb (17%) and head (12%). The most frequent specific site of injury was the elbow (28%), followed by wrist (17%), both of which occurred more frequently in climbing frame injuries. Fractures were the commonest type of injury (56%), followed by skin/soft tissue injury (29%). Plain x rays were required in 85% and blood samples in 2.5%. Pain relief was required in 47% of injuries, but children aged 1–6 years were administered analgesia less often than children aged 7–16 years (28% versus 70% respectively,  $p=0.007$ ). Physiotherapy was not requested for the management of any injury. Only 22% of injured children were given advice regarding RICE. None were given injury prevention advice. Admission was required for 12% of children.

**Conclusions:** This is the first reported study to describing the demographics of playground injury in Ireland. The data provided in this study may raise awareness of the nature of injury affecting children in each of these activities, and would be helpful in formulating much needed injury prevention strategies. Initially this could be focused on providing better advice on RICE and injury prevention advice, possibly with an emphasis on protective gear.

### 157 TRENDS IN HOSPITAL ADMISSIONS FOR SELF INFLICTED INJURIES AMONG RESIDENTS FROM A HEALTH BOARD REGION IN IRELAND OVER A 5 YEAR PERIOD: THE INCREASING POSITIVE ASSOCIATION WITH ALCOHOL

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**Introduction:** Alcohol abuse is a significant risk factor in suicide and self inflicted injuries. It appears that the impulsive nature of self inflicted injury may be facilitated by alcohol consumption. Given that alcohol consumption per capita in Ireland has increased dramatically in recent times and that the prevalence of binge drinking is high among the young and the adult population, this study was conducted to examine whether acute alcohol intoxication was increasing in prevalence among those patients admitted to acute hospitals with a self inflicted injury diagnosis.

**Objectives:** To use existing data to profile the patients admitted as inpatients with a self inflicted injury diagnosis over a 5 year study period, to examine trends in self inflicted injury diagnosis hospital admissions, and to quantify the proportion of patients admitted with self inflicted injury diagnosis that had an acute alcohol intoxication diagnosis also recorded.

**Methods:** All residents from a health board region in the Republic of Ireland. This health board region serves a population of approximately 350 000 people from four counties in Ireland. The population is made up of people from a mixed social class that is broadly similar to the population of Ireland as a whole. All self inflicted injury admissions (using ICD-9 Codes E950–E959) by residents from a health board region were extracted from the Hospital Inpatient Enquiry System for 1997–2001 inclusive. The data were analysed using the JMP statistical package (SAS Institute, 2001). Crude and age adjusted rates were calculated using StatsDirect. Pearson  $\chi^2$  test was used to compare proportions in groups of categorical data and  $\chi^2$  test for trend was used to identify linear trends.

**Results:** There were a total of 1842 admissions for self inflicted injuries to acute hospitals by 1504 residents from the study region recorded for 1997–2001, and 203 (11.0%) of these admissions had acute alcohol intoxication also recorded. Although there was no significant increase in the total number of self inflicted injury admissions over the study period (408 in 1997 versus 393 in 2001), there was a significant increase in the number and proportion of these admissions that also had an acute alcohol intoxication diagnosis (ICD codes 303.0 and 305.0) in 2001 compared with 1997 (16.5% versus 5.6%,  $p<0.01$ ). The age standardised rate of admission for self inflicted injury admissions that had an acute alcohol intoxication diagnosis increased linearly from 8.0 per 100 000 population in 1997 to 23.6 per 100 000 population in 2001.

**Conclusions:** This study has shown that of those self inflicted injuries episodes that were admitted to acute hospitals, there was a concomitant acute alcohol (drunkenness) diagnosis present in over 16% of the cases in the year 2001 compared with just 5.6% in 1997. This worrying increase in drunkenness among this cohort of patients needs to be addressed.

### 158 FACTORS ASSOCIATED WITH INFANT AND ADOLESCENCE MORTALITY

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**Introduction:** It is common knowledge that some factors present at birth can favour infant mortality, but the association between these birth events and mortality during adolescence has been little explored.

**Objectives:** To describe the composition of mortality over a period of 20 years for children born in 1978/79 in Ribeirão Preto, Brazil, and to identify, among some variables present at birth, those that represent risk of mortality among infants younger than 1 year and children aged 10 to 19 years, and the grouping of causes of death.

**Methods:** The association between some birth variables and the occurrence of death during the first year of life and from 10 to 19 years among 6746 single live births in 1978/79 was analysed by multiple logistic regression analysis and by probability of survival.

**Results:** 335 children died during the study period; 75.5% of the deaths (253/335) occurred during the first year of life, and 18.8% between 10 and 19 years (63/335). Mortality was higher among boys in both age ranges. The risks of infant mortality were: low maternal schooling (odds ratio (OR) 2.26), preterm birth (OR 3.5), low birth weight (OR 5.30), and male sex (OR 1.41). The risks for mortality between 10 and 19 years were: occupation of the head of the family (OR 4.64) and male sex (OR 6.67). Conditions originating during the

perinatal period predominated during the first year of life (37.9%) and external causes predominated between 10 and 19 years (77.8%), with predominance among boys (7:1).

**Conclusions:** Preterm birth and low birth weight were the main predictors of mortality during the first year of life. Socioeconomic factors at birth, represented by the occupation of the head of the family, influenced mortality during adolescence, which was higher among boys and was due to external causes.

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### 159 HEALTH SEARCH, THE RESEARCH INSTITUTE OF THE ITALIAN SOCIETY OF GENERAL PRACTICE: THE CREATION OF A RESEARCH DATABASE IN GENERAL PRACTICE

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**Introduction:** In 1998 the Italian Society of General Practice established an Institute of Research named Health Search (HS). It consists of a network of general practitioners (GPs), a school in which they receive specific training, and a database for collecting data from their daily clinical practice. The GPs who are HS researchers join the project on a voluntary basis and agree to use unique software for clinical data management and to regularly send their data to the server to which they are connected. The GPs included in the network were selected on a regional basis.

**Objective:** To evaluate: (a) the GPs' clinical practice management with respect to characteristics such as past experience in education and practice in medical research, the organisation of their professional practice, including the clinical equipment they routinely use, and their previous use of the computer for clinical data registration and management; and (b) the advantage and reliability of GPs' databases used for epidemiological purposes.

**Methods and Results:** A total of 695 GPs are included in the network (85.6% males, mean age 46.7 years), corresponding to about 12 doctors per one million inhabitants in Italy. Of these, 69.0% have at least one specialisation. The current patient population in 2001 is about 933 350 subjects (52.1% females) recorded by the 553 physicians connected to the database. As a preliminary evaluation of the completeness of the database for epidemiological purposes, we assessed the prevalence of hypertension among the GPs' patient populations: 5.4% of the subjects were affected by this disease with a standard deviation between GPs of 2.2%. The prevalence of hypertension varied among the GPs, and it was influenced by the proportion of patients over 64 years of age in each GP's population list, whereas it was not associated with the GP's frequency of use of the software or completeness of the patient's data registration.

### 160 HISTORY OF FAMILIAL CANCERS AND RISK OF BREAST CANCER: INTERACTIONS WITH ENVIRONMENTAL AND REPRODUCTIVE FACTORS

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**Introduction:** Among the various factors of risk for breast cancer, history of familial disease is one of the strongest (associated with a 2–3 fold increase in general population). Mutations of the *BRCA1* and *2* genes are known to confer high susceptibility to breast cancer. However less than 5% of women are estimated to be affected, and estimation of the penetrance of these mutations has recently been reduced. Beyond this direct link, genetic background may confer fragility to mammalian cells, which in turn are much more sensitive to reproductive or environmental factors.

**Objective:** To explore interactions between familial history of breast cancer and various factors.

**Methods:** E3N is a prospective cohort study on cancer risk factors of around 100 000 French women. They were aged 40–65 years when enrolled in the study in 1990 after replying to a baseline questionnaire. Follow up questionnaires are sent out at approximately 24 month intervals. Familial history of cancers was recorded in two questionnaires providing data on first and second degree affected relatives, and a map of the family structure. Variables inquired at baselines include environmental (dietary, alcohol consumption), reproductive (age at menarche, age at menopause, pregnancies, abortions, fertility treatments,

oral contraceptive use) and demographic factors (body mass index (BMI), socioeconomic status), history of benign breast disease, hormonal replacement therapies. Updates were obtained within the different questionnaires. In particular, menopausal status was recorded in each questionnaire. A survival analysis was performed to estimate adjusted relative risks of familial history of breast cancer. Two way and three way interactions were tested and subgroup analysis carried out.

**Results:** Estimation of the excess of risk associated with first and second degree familial history was consistent with the literature. Different interactions were found to be associated with breast cancer risk: fertility treatment intake, increased BMI, and late age at first full term pregnancy. Differential effects of interactions were observed before and after the menopause for some of the factors.

**Conclusions:** Excess of risk related to the number of relatives affected by breast cancer is increased when interactions with environmental and reproductive factors are taken into account. Even though all the results were not consistent with previously published studies, the identified interactions favour the idea of some genetic background increasing the sensibility of the mammalian cells to oestrogen related breast cancer risk factors.

### 161 RISK OF DEVELOPING LUNG CANCER AMONG CURRENT AND EX-SMOKERS: CASE–CONTROL STUDY

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**Introduction:** More than 80% of lung cancers are thought to result from smoking. The longer a person has been smoking and the more packs per day smoked, the greater the risk. If a person stops smoking before a cancer develops, the damaged lung tissue gradually starts to return to normal.

**Objective:** Results of a case–control study on lung cancer undertaken at Skopje, the capital city of Macedonia.

**Methods:** We interviewed 139 (127 men, 12 women) histologically confirmed patients with lung cancer and the same number of hospital controls matched for age and sex according to a pre-designed questionnaire. Effects of individual variables, defining the various aspects of tobacco smoking, daily number of cigarettes, and duration of smoking among current and ex-smokers were assessed using unconditional logistic regression models.

**Results:** Among the patients, 78.4% were current and 15.8% ex-smokers, compared with 41% current and 27.3% ex-smokers among controls. Odds ratio (OR) was 7.58 (95% confidence interval (CI) 3.41 to 16.85) for ever smokers and 3.18 (95% CI 1.27 to 7.98) for ex-smokers, compared with never smokers. OR for current smokers who smoked >20 cigarettes per day (cigarettes/day) was 4.55 (95% CI 1.87 to 11.07), compared with ever smokers who smoked >20 cigarettes/day. Current smokers who had smoked for >15 years and >20 cigarettes/day had 4.45 times significantly higher risk for these diseases compared with ever smokers (95% CI 1.69 to 11.73). OR for current smokers who had smoked for >15 years and more than 20 cigarettes/day was 3.72 (95% CI 1.43 to 9.69), compared with ever smokers.

**Conclusions:** Smoking cigarettes was the principal risk factor for lung cancer. Cessation of smoking reduces the risk of death from lung cancer; after 10 years the risk of lung cancer death among former smokers is about 50% of the risk of continuing smokers. Concerted control of smoking appears to be an urgent priority in lung cancer prevention.

### 162 LIPIDS AND BINGE DRINKING: IS THERE AN ASSOCIATION?

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**Introduction:** The impact of alcohol consumption on lipids has been discussed by several authors.

**Objective:** To examine the association between annual consumption of alcohol and binge drinking, and serum lipid levels, and to determine whether binge drinking is associated with changes in the lipid profile.

**Methods:** A random subsample from the cross-sectional HAPIEE pilot survey of 45–69 year old men from population registers in Novosibirsk, Russia (n = 136), Krakow, Poland (n = 56) and Karvina-Havirov, Czech

Republic (n=92) are discussed here. Participants attended medical examinations, which included measurement of weight and height and collection of a blood sample. Data concerning socioeconomic, health behaviours, and alcohol consumption were also collected at this time. Alcohol consumption data were collected using the graduated frequency method. Serum lipid concentrations were determined at the Institute for Clinical and Experimental Medicine in Prague.

**Results:** Mean annual alcohol consumption for this sample was 5.7 litres (mean 6.4 l/year excluding non-drinkers). The annual alcohol consumption for Czech men was nearly double that of their Polish and Russian counterparts at 8.3 l/year compared with 4.5 l/year. Exclusion of non-drinkers did not change these country differences (9.0 l/year and 5.1 l/year respectively). Binge drinking patterns were different in the three countries, with 16% of Czech, 26% of Russian, and 7% of Polish men consuming five or more drinks per drinking session at least once a month. Heavy binge drinking, defined as seven or more drinks per session, was found in about half of the Czech and Russian binge drinkers. Over 30% of the sample had high total cholesterol (>6.18 mmol/l) and low density cholesterol (LDL-C) (>4.14 mmol/l). Mean (SD) total cholesterol levels were 5.9 (1.15) mmol/l and LDL-C levels were 3.94 (1.08) mmol/l. Triglyceride levels were high (>2.26 mmol/l) in 27% of individuals (1.92 (1.40)). High density cholesterol (HDL-C) levels were low (<1.00 mmol/l) in 44% of the sample (1.15 (0.39)).

Regression analysis showed total cholesterol and HDL-C (but not LDL-C or triglycerides) increased slightly with increasing annual consumption of alcohol, after controlling for age, country, body mass index, and smoking. Total cholesterol and HDL-C (but not LDL-C or triglycerides) increased with increasing frequency of heavy binge drinking (defined as seven or more drinks per session). Among moderate binge drinkers (5–6 drinks per session) HDL-C increased with increasing frequency of drinking sessions, but there was no association with any other lipid parameters.

**Conclusions:** Results confirm previous studies that increases in total cholesterol and HDL-C are associated with increasing alcohol consumption. However, this paper also identifies an association between increasing frequency of heavy binge drinking and total cholesterol and HDL-C. Further studies with larger sample sizes are needed to confirm these findings.

### 163 A REVIEW OF INTERNATIONAL STUDIES ON ELECTROMAGNETIC FIELDS AND HEALTH EFFECTS, 1979–2003

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**Introduction:** Every year, a large number of articles are published relating human exposure to electromagnetic fields (EMF) and health effects. Although some studies (mainly regarding occupational exposures) have concluded there is an association with the development of some diseases (mostly several types of cancers), most of the studies have had inconclusive results. With regard to radio frequencies, the rapid growth of new technologies such as mobile wireless telecommunications has raised concerns that exposure to fields from mobile phones and base stations could have long term health consequences. The World Health Organization established the International EMF Project to assess the scientific evidence of possible health effects of EMF in the frequency range 0–300 GHz, and the results are expected to be published as an Environmental Health Criteria monograph.

**Objective:** To review and analyse the methods and results of scientific studies published in international publications between 1979 and 2003, to relate EMF exposures to the development of health effects.

**Methods:** A review of 155 studies published between 1979 and 2003 was performed. The criteria for the selection of the studies were: publication as an article in scientific journals indexed to Medline between 1979 and 2003; the subject of the article had to be health effects associated with electromagnetic fields (no studies on molecular or animal basis were considered). From each study we considered: authors; journal; publication date; nature of study (environmental or occupational); EMF frequency range; study population; sample size; type of epidemiological study; health effects studied; EMF exposure evaluation; and results (risk and 95% confidence interval).

**Results:** Case-control studies were the most used (101; 65.2%). In most of the articles (119; 76.8%), cancer was the health effect studied (mainly haematological cancers); also considered were, among others, general mortality, birth defects, cardiovascular morbidity, and mental symptoms (including suicide). EMF exposure evaluation was very heterogeneous. The results of 54 studies (35 occupational and 19

environmental) were considered statistically significant; however, in most there was only a slight risk elevation.

**Conclusions:** The main conclusions are the following: (a) there appears to be an association between occupational exposure and health effects, which can be explained by the longer period of exposure and the larger doses to which workers are submitted; (b) the studies relating environmental exposures and health effects presented more inconclusive results, which may be due to the difficulty in performing EMF exposure evaluations in domestic and everyday environments; and (c) the main weakness found in most of the studies was the lack of a reliable EMF dose exposure assessment.

### 164 VARIABILITY OF PM<sub>2.5</sub> EXPOSURE RELATED TO INDOOR AND OUTDOOR POLLUTION SOURCES IN PREGNANT WOMEN

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**Introduction:** This study is a part of ongoing prospective cohort study on relation between the exposure to environmental factors during pregnancy and outcome of pregnancy conducted in Krakow.

**Methods:** We measured personal PM<sub>2.5</sub> level in a group of 407 non-smoking pregnant women during the second trimester of pregnancy. In addition, indoor and outdoor PM<sub>2.5</sub> concentrations were measured simultaneously for 83 women. All three series of measurements were performed using the same type of equipment to ensure data comparability. Geometric means and geometric standard deviations were used to describe distribution of PM<sub>2.5</sub> exposure. Multiple linear regression models were used to find out the predictors of personal, indoor, and outdoor exposures.

**Results:** Mean (SD) total personal PM<sub>2.5</sub> concentration during the heating season was 43.0 (1.76) µg/m<sup>3</sup> and 30.2 (1.68) µg/m<sup>3</sup> during the non-heating season. We have found high correlation between personal and indoor (r=0.83), personal and outdoor (r=0.76), and indoor and outdoor (r=0.66) air pollution concentrations. The most powerful predictors for personal PM<sub>2.5</sub> level were ETS exposure (β coefficient 0.17; p=0.000) and heating season (β coefficient 0.15; p=0.004). Heating season was also the most powerful predictor of indoor (β coefficient 0.22; p=0.001) and outdoor (β coefficient 0.25; p=0.000). Variability of the personal exposure to PM<sub>2.5</sub> was explained in 86% by indoor and outdoor PM<sub>2.5</sub> levels together with ETS exposure. No other variables had significant impact on personal PM<sub>2.5</sub> level.

**Conclusions:** The level of PM<sub>2.5</sub> pollution in Krakow is relatively high. The highest proportion of personal exposure to fine particulate matter originated from indoor sources of air pollution and ETS exposure.

### 165 PROFILE OF THE DRUGS CONSUMERS IN COMMUNITY OF MADRID, 2002

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**Introduction:** The problem of the consumption of illegal drugs in Madrid lies in its association with delinquency, marginalisation, and risk of HIV transmission. To investigate the profile of drugs users, an annual survey directed to them in their own localities has been carried out since 1999.

**Objective:** To describe the sociodemographic characteristics of 300 drug consumers in 2002 and the evolution along the 4 years of their risk behaviours for HIV infection.

**Material and methods:** We designed questionnaires and contacted the non-governmental organisations (NGO) that work with drug users. The survey was carried out on a minimum of 300 street recruited drug users each year. The inclusion conditions were: older than 18 years and consumers of drugs in the last month. A sample of saliva for the detection of anti-HIV antibodies was collected. We calculated frequencies of social and demographic variables, and a comparison of risk behaviours in the 4 years.

**Results:** The average age of the 300 people was 35.7 years; 77.7% were men, and 5.0% of them were foreigners; 56.3% had primary education and 22.3% had no education. The average (SD) age of starting drug use was 18.2 (5.2) years. Drugs were used intravenously by 41.3%; the most consumed drug was the mixture of cocaine and heroin, and the average (SD) number of daily injections was 4.2 (1.2). Among intravenous drug users during the previous month, 55 (6.3%)

used drug preparation paraphernalia, 8.1% shared syringes, and 43.5% reused their own syringe an average (SD) of 1.6 (0.1) times. By gender, women reused and shared material less than men. There were 36.3% reported as having anti-HIV antibodies, and saliva samples confirmed this information; 56.9% of positives receive therapy. With regard to intercourse, 44.3% had had a stable relationship in the previous 6 months and only 10.3% always used condoms; 23.3% used them with occasional partners. Data from previous years were similar.

**Conclusions:** The evolution of the risk factors in the 4 years indicates that the injections diminish but the risk practices remain. These results continue to show a scenario of high risk for the HIV transmission among drug consumers, for the high yearly prevalence of anti-HIV antibody in this group, shared and repeated use of material, and lack of condom use. Women seem to be more aware and have fewer risk behaviours. Active programmes are necessary in drug users' own communities in order to avoid risk behaviours.

### 166 COMPLEMENTARY AND ALTERNATIVE MEDICINES: USE AND USERS IN PORTUGAL

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**Introduction:** Worldwide, complementary and alternative medicines (CAM) are gaining acceptance. In Portugal, however, the extent of usage has not been evaluated.

**Objective:** To quantify the prevalence of CAM use and to evaluate its characteristics.

**Methods:** This was a cross sectional evaluation using a face to face interview performed from November 2003 to January 2004. A non-probabilistic sample of 1772 community dwellers, 18 to 87 years old, approached at "Loja do Cidadão" (an official department where people can obtain services, such as telephone and identification cards) in Porto. Of these, 54.3% (962) were women. Medical students obtained the information. A structured questionnaire was completed and data on the utilisation of specific CAM options (acupuncture, aromatherapy, herbal medicine, hydrotherapy, hypnotherapy, homeopathy, macrobiotics, massages, osteopathy, reiki) were collected.

**Results:** Overall, 42.0% reported ever using at least one type of CAM, the most common being hydrotherapy (18.9%), massages (16.3%), and herbal medicine (9.5%). CAM users tended to be female, young and better educated; positive trends were found for a decreased utilisation with increasing age ( $p$  for trend=0.022) and increased utilisation with increasing educational level ( $p$  for trend<0.001). The most commonly expressed reasons for utilisation were treatment of musculoskeletal disorders. Satisfaction towards CAM use was revealed to be high (87.7% of the users reported being reasonably or very satisfied).

**Conclusion:** The use of CAM is highly prevalent in Porto. These findings emphasize the importance of solving questions related to insurance, clinical practice, and Government support, covering these techniques' costs.

### 167 OCCUPATIONAL EXPOSURE TO CHEMICALS AND RISK OF CUTANEOUS MELANOMA (CM) IN SWEDISH MEN

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**Introduction:** Occupational exposures could play a role in the aetiology of melanoma.

**Objective:** To estimate the risk of melanoma in men associated with occupational exposure to some chemicals using the Swedish Cancer Registry.

**Methods:** The historical cohort of Swedish workers in 1970, followed during 1971–1989 by record linkage with the Swedish National Cancer and Death Registers was combined with a Swedish job exposure matrix (JEM), assigning exposure for around 90% of all workers to 14 different chemicals. Exposure was assessed for all combinations of occupations and industry, classifying them, for each substance, as "probable" (exposure exceeds TLV +10%:  $\geq 66\%$  of subjects), "possible" (10–66% of subjects highly exposed) and "no exposure" (<10% of subjects highly exposed). Lead, arsenic, and peak of pesticides had only possible exposures and mercury only probable. Log linear Poisson models were fitted to obtain relative risks (RR) for each chemical adjusted by age, period, geographical area, town size, and occupational sector as a proxy for socioeconomic status. We estimated all exposed versus non-exposed (global), probable versus non-exposed (P/nE) and possible

versus non-exposed (Pos/nE) risks globally and by anatomical sites: head and neck (H&N), thorax, upper limbs (UL) and lower limbs (LL).

**Results:** After record linkage with JEM, 5603 cases were available for analysis. Exposure to mercury was associated with a global excess of risk (RR 1.47;  $p<0.05$ ), also present in H&N (RR 2.27) and thorax (RR 1.89;  $p<0.05$ ), which reflects the high risk of CM in dentists, as this was the only exposed job in our JEM. Marginally significant high risk estimators were also found for exposure to lead (Global RR 1.40). However, the most relevant result was the high relative risk in workers possibly exposed to short term high exposure peaks of pesticides (RR 1.27;  $p<0.05$ ), also observed in most anatomical sites (H&N RR 1.43; thorax RR 1.20; and UL RR 1.93;  $p<0.05$ ). This association was more clearly seen in the north of the country where the sun exposure is less intense (Global RR 1.70 ( $p<0.05$ ); H&N RR 1.24; Thorax RR 1.63; UL RR 3.36 ( $p<0.05$ ); and LL RR 2.81).

**Conclusions:** Exposure to peaks of pesticides might increase risk of melanoma, especially on the limbs, in the north of Sweden. Mercury and lead could also be related to this neoplasm. Cancer registries allow the study of occupational exposures in relatively infrequent neoplasms such as melanoma.

### 168 HOSPITAL DISCHARGING DATA OF SOME TYPES OF CANCER IN THE COMMUNITY OF MADRID, 2001–2002

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**Introduction:** The Registry of Basic Data at Discharging of Hospital (CMBD in its Spanish acronym) records episodes of diseases and outpatient surgery included in the Spanish National Health System assistance list that require hospital care. The system is based on three characteristics: exhaustiveness, homogeneity, and quality of recorded data. Some diseases, such as several types of cancer, always require hospital care, so this registry is useful to describe some of their features.

**Objective:** To describe the hospitalisations of some types of cancer, according to the CMBD Registry in the community of Madrid, Spain in 2001 and 2002 years.

**Methods:** Source of data: CMBD Registry of Community of Madrid, Health Department, years 2001 and 2002. Number of hospitalisations for kidney, non-renal urinary tract, lung, bladder and oesophagus cancers (by their respective ICD-9 codes), were described by gender, age, average hospital stay, and type of funding (public or private). Means comparison was performed to assess if are there differences in average age and average hospital stay, between males and females.

**Results:** In 2001 and 2002, 2373 hospitalisations for those cancers occurred in Madrid; 1916 (80.7%) in men and 457 (19.3%) in women. Of these, 687 were lung, 633 renal, 517 bladder, 390 oesophageal, and 146 non-renal urinary tract cancer. The male/female case ratios were 2.0 in kidney, 3.4 in non-renal urinary tract, 5.1 in lung, 7.2 in bladder, and 9.3 in oesophageal cancer. The average age of the patients ranged from 60.6 (renal cancer) to 69.5 years (non-renal urinary tract cancer). Among men, average age was higher in lung ( $p=0.001$ ) and bladder cancers, and among women was higher in kidney, non-renal urinary tract ( $p=0.004$ ), and oesophageal ( $p=0.062$ ) cancers. The average hospital stay ranged from 11.1 (renal cancer) to 23.6 days (oesophageal cancer); it was lower in females, but the difference was only statistically significant in bladder cancer ( $p=0.04$ ). Regarding type of funding, 80% were treated in the public system (69% bladder, 90% non-renal urinary tract cancer); this percentage was a little higher among men (82%) and lower among women (73%).

**Conclusions:** In several diseases, such as some types of cancer, CMBD is a useful instrument to describe their distribution. In Madrid, in 2001 and 2002, substantial differences by gender in average hospital stay were not found. Some differences concerning age of presentation were found, as in lung cancer. The majority of these episodes were treated in the public healthcare system.

### 169 OBELIGS: DESIGN FOR A MULTICENTRE PREVENTION AND AETIOLOGICAL STUDY ON THE INTERACTION OF LIFESTYLE, DIET AND GENETIC FACTORS IN CHILDREN AND INFANTS

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**Introduction:** Overweight and obesity are threatening to become a global epidemic, particularly involving children and adolescents. Early development of obesity is a challenging medical problem, leading to a

substantial increase in morbidity and early mortality from various diseases. Obesity is a multifactorial disease that is much more than excessive fat accumulation: it lies at the interface between disorders of appetite regulation and energy balance and a hostile environment, characterised by an almost unlimited supply of convenient, energy dense food and low physical activity. As prevention of obesity in adults is largely unsuccessful, primary prevention in children will be the most effective means of dealing with the problem.

**Objectives:** The planned multicentre European study will therefore concentrate on infants and children with the following aims:

- Identification of the effects of genetic and non-genetic factors and their interaction.
- Identification and validation of the potential beneficial effects of selected nutrients on the regulation of appetite and energy balance.
- Development of effective evidence based strategies for the primary (general population) and secondary (high risk groups) prevention.
- Development of nutritional, behavioural and ethical guidelines.
- Dissemination of results and educational programmes.

**Methods:** The project will investigate the specific biological, social, and psychological characteristics of each developmental period. Integration of partners from the food industry opens the possibility of developing and evaluating health promoting and weight reducing foods. The project will cover all aspects, encompassing aetiology, controlled primary and secondary prevention in pre-school and school children, and counselling of institutions and politicians. Thus, cross sectional, case-control, cohort, and family studies will be carried out. In addition, existing surveys will be re-analysed and pooled. Biological mechanisms will be investigated concerning the determination of biomarkers, the investigation of food preferences and sensory perception of food, and the development of functional foods. Societal aspects will be included. In particular, ethical issues will play an important role and have to be adequately considered.

**Discussion:** Besides the availability of previously collected data on 85 000 children, a new cohort of 25 000 European children can be built up, thus establishing the largest database on this subject so far. A detailed primary and secondary prevention strategy has been worked out that will be implemented in several European countries on both an individual and a community level. The research will contribute to the understanding of individual susceptibility, resulting from gene-gene and gene-environment interactions, to chronic overweight and obesity, and its co-morbidities. The results will be exploited for the design of safe, high quality, health promoting foods in close collaboration with food producers. Tailored and general prevention programmes that are easy and effective to implement in larger populations in European countries will be provided. Ethical, nutritional, and behavioural guidelines will be delivered.

#### 170 GEOGRAPHICAL DISTRIBUTION OF AIDS CASES IN RIO DE JANEIRO CITY, 1989–2000

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**Introduction:** Now, in its third decade, HIV has been continuously spreading worldwide, especially in less developed countries and deprived communities. Brazil presents a unique situation, combining a mature AIDS epidemic, universal access to potent antiretroviral therapy, and deep social inequality. As shown before by the international literature, when communities are jeopardised by social and gender inequality, HIV spreads fast and extensively.

**Methods:** We used spatial analysis techniques to assess the dynamic of AIDS in the city of Rio de Janeiro, the second largest Brazilian city and with the second highest (after São Paulo) number of AIDS cases. The health data came from the Brazilian AIDS Cases Databank (1989–2000), and the cases were geographically referenced to their neighbourhoods using their home addresses (zip codes contained too much missing and/or imprecise information). We selected cases of individuals of both sexes, between 15 and 59 years of age, and grouped the data into four time periods of 3 years each. We used the estimated population of the middle period to calculate the indirect age and sex standardised incidence rates. Owing to the statistical instability of rates because of the small numbers upon which they are based, we used the empirical Bayes estimator to shrink the rates to the average of the neighbouring areas.

**Results:** Using the local index of spatial autocorrelation, we identified some spatial clusters of extremely high incidence rates (in both men and women) in downtown neighbourhoods. The epidemic increased substantially from the first (1989–1991) to the second period (1992–1994)

under analysis, especially among women. Disenfranchised neighbourhoods have been also been particularly affected by the epidemic.

**Conclusions:** Recent successes achieved by the Brazilian integrated programme of prevention and care should not be viewed with complacency, as the epidemic is progressively affecting those most in need, jeopardised by social and gender inequality, and posing renewed challenges to prevention (to be sensitive to gender issues, poverty, and prejudice) and care, due to the pressing need to treat populations usually under-served by regular healthcare.

#### 171 MULTILEVEL REGISTER LINKAGES—A POWERFUL TOOL IN STUDIES ON LARGE CHANGES IN SOCIETY AND CANCER RISK

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The strong structural changes during the past few decades have influenced the way of life as well as the health of the population in Finland as in many other populations. There is large variation in cancer risk by socioeconomic status, and the differences increase, rather than diminish, with time

A study series designed for all Nordic countries aims at understanding the excess risk attributable to the changes in social position during the life span of one individual and over generations. Going down in the social scale is probably associated with negative health consequences but also rapid upward social class shift seems to be associated with increase of numerous cancer diseases. Emphasis will be given to risk determinants related to life habits, health behaviour (for example, medicalisation and screening participation), comorbidity, work life (work hazards, unemployment, work disability), and social/physical environment. We will especially study the impact of sedentary work (which is estimated to soon cause more cancers than all known traditional work related carcinogenic agents together), women's reproductive variables (postponed/reduced parity due to work career), and other modern work related risk factors of cancer risk.

Risk of cancer (and other diseases) can be effectively studied in the entire population based on subsequent census files linked with mortality and disease registers, and with registers on demographic data. Work related factors can be linked via precise occupational titles using a job exposure matrix (FINJEM), and factors related to living environment similarly via exact locations of the residences. A system called SMASH (small area statistics on health) giving risk estimates for any area (combined of grids of 500m×500m) in Finland is already in use. Life style variables (most important: smoking) can be extracted from historical survey data on large population samples or from biobank data (for example, blood sera available from at least 1.4 million Nordic persons; allows tracing of markers of exposures) and generalised to the entire population.

I will demonstrate, how extremely well a whole population register based study using FINJEM can mimic the results achieved in the traditional smaller occupational studies. The example case is the association between silica dust and cancer of the lung and stomach.

The other example presents our on going study on effects of hormonal replacement therapy (HRT). Every second Finnish postmenopausal woman uses HRT, which increases her risk of breast cancer and endometrial cancer, and possibly also mortality of non-cancer outcomes. This risk should be counterbalanced with gains, and optimal mode and length of HRT should be found. Results from a study based on a cohort of 800 000 HRT users and their exact HRT consumption histories extracted from Social Insurance Institute's register of reimbursable medicines. For example, life habits and obesity details of these women are taken from the survey data of the National Public Health Institute. Can this design compete with randomised trials?

#### 172 SELF IMAGE AND PHYSICAL APPEARANCE IN SCHOOLGIRLS

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**Introduction:** The prevalence of overweight and obesity among adolescents is rising in developed countries. High prevalence of dieting and health compromising behaviours for weight loss are also observed. Body image disturbance could represent significant health issues.

**Objective:** To determine the prevalence of body image disturbance in adolescent girls from the public schools of the district of Porto, in Portugal, to determine the prevalence of those overweight and of those that wished to be thinner, and identify some associated factors.

**Methods:** A cross sectional study of a sample of girls (1724) aged 10 to 19 years from 99 public schools of the district of Porto, selected by a



random process, took place in 1999. A questionnaire that included the criterion of body image disturbance and measurements of height and weight was used.

**Results:** The prevalence of body image disturbance was 10% (95% confidence interval 8 to 12). The prevalence of overweight was 21% (19 to 23). We did not observe significant differences in overweight by age. The proportion of girls who once tried to become thinner by dieting was 35%, and those dieting at the moment of the interview was 19%. Most girls failed to meet current dietary recommendations and they reveal a lack of physical activity.

**Conclusions:** There is a need for better understanding of the determinants of body image disturbance and improvement of prevention of overweight in adolescents by health promotion programmes.

### 173 CHILDHOOD CANCER AND MAJOR MALFORMATIONS: A POPULATION-BASED ANALYSIS OF 33 254 NEWBORNS IN THE MAINZ BIRTH REGISTRY

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**Introduction:** A causal relationship exists between some major malformations and some forms of cancer. Associations between specific major malformations and certain types of childhood cancer are described (for example, trisomy 21 and leukaemia).

**Objective:** To investigate the newborns of the birth cohort for developing childhood cancer. Prevalence rates and anamnestic risk factors were analysed.

**Methods:** During the study period (1990–2001), 33 254 newborns were registered in the population based birth registry of Rheinhessen. All newborns underwent standardised examinations and anamnestic data were collected. All children with cancer born in the study region were taken as cases. Newborns without cancer were defined as controls. Case-control analyses were performed and relative risks calculated as odds ratios (OR) with 95% confidence intervals (CI).

**Results:** Of the 33 254 infants, 51 (0.15%) developed cancer: solid tumours (n = 23; 45%), leukaemia (n = 11; 22%), central nervous system (CNS) tumours (n = 6; 12%) and neuroblastoma (n = 5; 9%). Compared with the expected age specific incidence rates (n = 54.5) of the German Childhood Cancer Registry, our incidence rates were lower (n = 51), but not significantly different. In our birth cohort the prevalence of major malformations is 6.7%. Of 51 infants with cancer, 9 (17.6%) had major malformation. Children with major malformations had a significantly higher risk for cancer (OR 3.2; CI 1.6 to 6.6), especially for CNS tumours (OR 7.5; CI 1.4 to 41) and leukaemia (OR 8.6; CI 2.5 to 29.4). Significant anamnestic risk factors were high birth weight >4000 g (OR 2.1; CI 1.1 to 4.3), maternal intake of antibiotics during the first trimester (OR 2.5; CI 1.1 to 5.8), and caesarean section (OR 2.0; CI 1.1 to 3.6).

**Conclusion:** The cancer incidence in our study cohort is comparable to those of the German Childhood Cancer Registry. Children with major malformations have a significantly higher risk for developing cancer. High birth weight seems to be an important risk factor for developing childhood cancer.<sup>1</sup> Further research is needed to investigate a possible association between maternal antibiotic intake and childhood cancer.

1. Schüz J, Kaatsch P, Kaletsch U, Meinert R, Michaelis J. Association of childhood cancer with factors related to pregnancy and birth. *Int J Epidemiol* 1999;28:631–9.

### 174 REFORMING HEALTHCARD IN KOSOVA: LUXURY OR NECESSITY?

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**Objective:** To raise questions about the overall picture of the healthcard system reform in Kosova.

**Methods:** Relevant database, statistical data from the most current sources, reports and reviews and projects.

**Results:** The data clearly demonstrated the need of urgent reform of the Kosovan Health System because during the 10 years preceding the 1999 crisis, it was characterised by neglect and poor maintenance, and dismissal of ethnic Albanian employees from the Health System.

Epidemiological information was needed to inform policy makers and to provide a baseline against which many of the rapidly implemented programmes in the health and nutrition sector could be evaluated. The Ministry of Health has produced interim health policy guidelines. The current healthcard system of Kosova is administered and managed at the central level by the Ministry of Health.

**Conclusion:** As modern e-medicine is in rapid development, Kosova's health system is need of further reform to turn the healthcard system into a high quality, comprehensive and cost-effective system.

### 175 THE DEVELOPMENT OF GEOPROCESSING AND SPATIAL DATA ANALYSIS FOR HEALTH APPLICATIONS IN BRAZIL

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**Introduction:** There is a growing demand for the incorporation of geoprocessing techniques in public health. This process will be only successful with access to spatial data, software, and training programmes, and development of spatial analysis tools. These development lines are interdependent and the possible technological solutions should consider the basic conditions of data availability and quality, cartographic data exchangeability, and improvement of software that must be user friendly and able to analyse specific public health problems. In addition, these conditions imply the adoption of training strategies for the public health system hierarchical network.

**Methods and Discussion:** During the past decade, large technological investments have been made by Brazilian public institutions through the implementation of informational basis. One of the resulting products is the demographic census, related to the year 2000, and made available 3 years later. This census product incorporates an analytical tool for data exploration, allowing the visualisation of thematic maps. Several aggregation levels are available for maps including not only the political territories, such as states and municipal districts, but especially census tracts boundaries, which are relevant to public health activities at local level. The health services in Brazil are public access, and the decentralisation of public health actions over the last 20 years reinforces the role of municipal administration in the definition of administration proposals and demands. Some geoprocessing initiatives have been carried out in cities of different sizes and complexities. Porto Alegre, in Rio Grande do Sul state, developed an application for automated geocoding death and live birth residences. Belo Horizonte, in Minas Gerais state, developed event geocoding application onto a digital street map. Other cities use aggregated health data to relate events to polygons representing districts or other consolidated administrative boundaries. Supporting this demand, multidisciplinary groups, such as RIPSA and the Saudável project, are acting towards the consolidation and diffusion of methodological and technological solutions for the incorporation of a geographical approach of health. RIPSA (the Interagency Health Information Network), which is an initiative of the Brazilian Health Ministry with the cooperation of the Pan-American Health Organization, is a collection of several institutions that produce data with special interest for Public Health analysis. One committee is specifically concerned with health data geocoding and analysis, called "GeoSaúde". The Saudável project (the Epidemiological Surveillance Support System) proposes the usage of spatial information technologies for the support the disease control activities. It is formed by institutions that produce knowledge and software and is dedicated to implementing spatial analytical tools for disease surveillance routine at local level. The scripts are based on the TerraView free software.

**Conclusion:** This work indicates the current conditions for the geoprocessing development and the challenges for the spatial technology democratisation in Brazil.

### 176 EPITEEN: ASSEMBLING A PORTUGUESE COHORT OF CHILDREN BORN IN 1990

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**Introduction:** Longitudinal studies are essential for obtaining high quality evidence about the determinants of health and wellbeing. Tracking the development of young people to early adulthood allows identification of a variety of individual, familial, and environmental risk and protective factors associated with different biological and social outcomes over time. This information will aid identification of opportunities for providing early intervention and prevention. The

Epiteen study is a cohort of children born in 1990 who are registered at all public and private schools in Porto, Portugal. The study aims to provide a database for a comprehensive understanding of children's development, the tracking of risk factors, and their effects on adult health.

**Methods:** To describe the logistics and the fieldwork involved in the assembling of the cohort.

**Methods:** All schools of Porto were contacted to identify children born in 1990 regardless of formal years of education. The study was presented to the children and their parents, and the parents completed a questionnaire at home, providing information on demographic, social, behavioural, and medical characteristics of the child and the family. At the school, the children answered another questionnaire and clinical examination was performed, including pulmonary functions (by portable spirometer), bone mineral density, weight, height, tricipital and bicipital skinfold thickness, blood pressure (measured with a mercury sphygmomanometer), and a fasting blood sample was drawn for assessment of lipoproteins and glucose.

**Results and conclusions:** We identified 1135 students born in 1990, of which 1.3% could not be contacted (missing classes frequently). Of the 1318 questionnaires distributed to the parents, 65.6% were given back completely filled and only 1.9% refused participation. A total of 962 children agreed to participate in the clinical examination, and 63.5% gave a blood sample. The complete group of approximately 3500 children will be assessed until June 2004. The programmed background studies and pilot results for conditions such as depression, asthma, diabetes, obesity, hypertension, and metabolic syndrome will be presented.

### 177 AIDS MORTALITY PATTERN IN BRAZIL, 1983–1999

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**Introduction:** The outbreak of AIDS in Brazil can be described according to three evolutionary phases. The initial phase was mostly characterised by infection of homosexuals. The second phase involved the growth of the number of cases related to transmission through the usage of injectable drugs and dissemination among heterosexuals. The third phase is characterised by the growth of AIDS cases among women, geographical expansion towards the inner part of the country, and increase of cases among the poor.

**Objective:** To describe the temporal evolution of AIDS mortality in Brazil, comparing its development with the main death cause groups at national and regional level.

**Methods:** This was a descriptive analysis of mortality caused by AIDS. The rates and proportions by sex and age group were analysed at national and regional level. The data were extracted from the Mortality Information System (SIM/DATASUS/MS).

**Results:** In the 1980s, the sex ratio was 7:1; therefore the disease was essentially masculine. In the past decade, the ratio decreased to 3:1, indicating that the AIDS mortality process was becoming increasingly feminine. Mortality increased between 1983 and 1995, when the death rate reached its highest value (9.7/100 000 inhabitants in 1995); from then on, the death rate decreased, and was 6.5/100 000 inhabitants in 1999. Regional analysis indicates that AIDS expansion was more intense in the southeast region, where the death rate reached 16.3/100 000 inhabitants between 1994 and 1996. Even though the northern region presents the smallest death rate from AIDS (2.0/100 000 inhabitants, in 1999), the largest percent growth was observed in this region between 1990 and 1999 (3.7%).

**Conclusions:** During the past years, AIDS mortality in Brazil has shown an important reduction, probably related to governmental actions such as offer of anti-retroviral treatment, precocious prevention and treatment of opportunistic diseases, increase in the HIV diagnosis services network, and improvement of surveillance of AIDS deaths.

### 178 OCCUPATIONAL MORBIDITY IN OPORTO, 1998–2003

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**Introduction:** In Portugal, there is a population based epidemiological surveillance system consisting of reports by physicians of all known or suspected cases of occupational diseases. These cases are subject to confirmation by a national agency, the National Centre of Professional Risks Protection (Centro Nacional de Protecção Contra os Riscos Profissionais), which, after confirmation, communicates all known cases to the public health services, so that preventive measures may be taken.

**Objective:** To analyse the confirmed cases of occupational diseases that were reported in the district of Oporto from 1998 to 2003 according to sex, age group, and professional activity of the workers, type of disease, type and location of the enterprise, and year of disease communication.

**Methods:** We consulted all confirmed cases of occupational disease that occurred in the district of Oporto in a period of 6 years (1998–2003). A database was created using the Epi Info. The following variables were codified: case of occupational disease (CID 10 and the code used in Portugal for professional diseases); the profession (we used the Professions National Classification), and the enterprise where the person was working when they developed the professional disease (we used the Portuguese Enterprise Economic Activity, 2nd revision). The analysis was performed using the tools available in Epi Info.

**Results:** The number of confirmed professional diseases were almost 2000 for the 6 years. The morbidity in male workers was three times greater than in female workers. The main age groups were 45–54 and 55–64 years. Workers in the extraction industries and in building construction were the two groups with the highest levels of occupational disease. More than 50% of the cases corresponded to diseases due to physical agents (such as noise and vibrations); about one third corresponded to pulmonary diseases (of which 75% were cases of silicosis), and less than 1% were diseases due to biological agents (such as brucellosis, tuberculosis, or leptospirosis). The proportion of cancers due to occupation was minimal (less than 0.005%). The medium annual incidence of professional diseases in active age groups (15–65 years) was 28.5/100 000.

**Conclusions:** The main conclusions are the following: (a) only a limited number of cases are notified, which means that additional efforts should be made to improve this epidemiological surveillance system; (b) there are still too many reported cases of silicosis, probably because of lack of preventive measures in silicotic workplaces or to doctors' better knowledge of this specific disease as being notifiable; (c) there is an underreporting of cancers due to occupation and of diseases due to biological agents. This means that increased numbers of those diseases are not recognised as occupational, limiting the development of preventive actions.

### 179 SPATIAL ASSOCIATIONS BETWEEN THE INCIDENCE OF TYPE 1 DIABETES MELLITUS AND SOCIOECONOMIC INDICATORS: AN ECOLOGICAL STUDY IN GERMANY

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**Introduction:** The incidence of Type 1 diabetes seems to be increasing worldwide. However, the aetiology of the disease is still unknown. Environmental factors are believed to trigger a T cell mediated autoimmune process in genetically susceptible individuals.

**Objective:** To analyse associations between the incidence of Type 1 diabetes and indicators of the socioeconomic status on an aggregated level in an ecological study.

**Methods:** Incidence data on the geographical level of districts were taken from the diabetes register of North Rhine-Westphalia, the German federal state with the largest population, for the period 1996–2000. Completeness of ascertainment of the register was 96%. Aggregated data on the socioeconomic status were obtained from the regional North Rhine-Westphalian statistical office. Socioeconomic indicators used were population density, proportion of foreign population, measures of school education, vocational training and income, quota of unemployment and social welfare recipients, proportion of single parents, and size of living space. Associations between Type 1 diabetes incidence and socioeconomic indicators were assessed by Spearman's rank coefficient ( $r_s$ ) and usual univariate and multivariate Poisson regression analysis. In addition, Poisson random effects models and conditionally autoregressive (CAR) Poisson models using a Bayesian approach were applied in order to take into account unstructured and autocorrelated spatial variation of type1 diabetes incidence.

**Results:** Significant associations were observed between diabetes incidence and population density, proportion of foreign population, household income and a specially defined "income ratio" ( $r_s = -0.38, -0.46, -0.56$  and  $0.63$ , respectively). In Poisson regression, all socioeconomic indicators, with the exception of living space and single parents, were significantly associated with the incidence of Type 1 diabetes. Strongest associations were observed for population density, proportion of foreign population and indicators of income, education,

and vocational training. An increase of one SD in population density, proportion of foreign population, or household income was associated with a 7–10% decrease in diabetes incidence, and an increase of 1 SD in “income ratio” or measures of education and vocational training caused a 6–10% increase in incidence. Taking into account spatial variation in Poisson random effects and CAR models did not affect these associations seriously. In multivariate analysis, only indicators of income remained significantly associated with the diabetes incidence.

**Conclusions:** This ecological study indicated that the incidence of Type 1 diabetes is higher in economically and educationally deprived and less densely populated geographical areas. Spatial variation and auto-correlation did not have an important impact on the observed associations. The inverse association between population density and incidence is in accordance with the so-called “hygiene hypothesis”. However, the observed ecological associations need confirmation by studies on an individual level. In particular, causal factors acting behind the socioeconomic indicators have to be identified.

### 180 OLIVE OIL CONSUMPTION AND INCIDENCE OF OBESITY: THE SUN PROJECT

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**Introduction:** Olive oil is thought to increase the risk of obesity because it is an important source of fat in the diet of Mediterranean countries. However, epidemiological data at the individual level to assess this hypothesis are scarce. Some cross sectional studies have not supported an increased risk of obesity related to olive oil consumption. Nevertheless, longitudinal studies are needed to confirm that olive oil consumption does not increase the risk of becoming obese.

**Methods:** The SUN Study is an open enrolment cohort currently including 13 500 university graduates (University of Navarra alumni, members of professional associations, and other university graduates), recruited and followed up through biennial mailed questionnaires. Diet was evaluated at baseline with a semiquantitative food frequency questionnaire, previously validated in Spain. This analysis included 4866 participants who completed the first follow up questionnaire after excluding 255 subjects with prevalent obesity at baseline (body mass index (BMI)  $\geq 29.5$  kg/m<sup>2</sup>), 131 men with energy intakes  $< 600$  or  $> 4200$  kcal/day and 459 women with energy intakes  $< 400$  or  $> 3500$  kcal/day. New cases of obesity were ascertained through the first follow up questionnaire considering a BMI equal or higher than 30 kg/m<sup>2</sup> as the outcome. To assess the relationship between olive oil consumption and the risk of obesity we fitted logistic regression models, considering quintiles of olive oil consumption and energy adjusted olive oil consumption as the exposure. Odds ratios (OR) and 95% confidence intervals (CI) were calculated considering the lowest quintile of olive oil consumption as the reference category.

**Results:** We identified 50 new cases of obesity during a median follow up of 28.5 months. The OR (95% CI) of incident obesity in the second, third, fourth and fifth quintiles of olive oil consumption were 0.42 (0.15 to 1.15), 0.57 (0.25 to 1.34), 0.75 (0.29 to 1.92), and 0.49 (0.16 to 1.51) respectively using the first quintile as the reference group, after adjusting for gender, age, physical activity, television viewing, baseline body mass index, snacking, total fat intake, and glycaemic load. In the case of energy adjusted olive oil consumption the ORs were 0.21 (0.07 to 0.67), 0.35 (0.14 to 0.87), 0.38 (0.15 to 0.97), and 0.27 (0.09 to 0.82) respectively. There was no significant linear trend among categories of olive oil consumption.

**Conclusions:** Our prospective data do not provide evidence to conclude that olive oil consumption increases the risk of obesity in a Spanish cohort of university graduates.

### 181 THE SOBRAL SURVEY ON HEALTH, EDUCATION AND QUALITY OF LIFE OF CHILDREN AGED 5–9 YEARS IN URBAN SETTINGS OF SOBRAL, CEARA, BRAZIL, 1999–2000: USE OF THE HEALTH SERVICES

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**Introduction:** In Brazil, women of reproductive age and children under 6 years of age were the exclusive groups that received the population healthcard at the public primary level. Traditionally, children over this age did not seek routine assistance, being frequently seen only in emergency rooms. An increase in population access to healthcards was expected with the implementation of the municipality Family Health Programme (PSF) in 1997.

**Objective:** To evaluate the health service use by the population aged 5–9 years.

**Methods:** A cross sectional study was designed to interview mothers, preferably, or another adult at home. A stratified probability sample by year of birth (from 1990 to 1994) allowed the selection of 3444 children aged 5–9 years from a dataset of all families with children of this age living in the urban area of the city. These data were obtained from an official form of the city's PSF, filled out by the community health workers. Only one child per home was allowed to enter the study randomly. From the total sample, a sub-sample of children was randomly selected for clinic and laboratory examinations. Data were collected from November 1999 to October 2000, by trained interviewers, using a pre-tested semi-structured questionnaire.

**Results:** At the interview, 90% of the Sobral families were enrolled in the PSF and 88.6% attended the PSF units: 49.5% occasionally and 39% very frequently. Hospital assistance was received by 39% when children were sick; of these, 77.5% were for emergency reasons. In the year prior to the interview, 47% of all children of this age attended at least one routine ambulatory care and 16.7% in the month prior to the interview. Of those children that sought assistance, 97.6% got their appointments on the same day. More than 60% of interviewed people evaluated the assistance provided by the Sobral's PSF as good.

**Conclusion:** A high family adherence to the PSF activities was observed, especially when measured by the children's routine care, which is unusual in Brazil at this studied age. The observed high health service use could be explained by the similarly high PSF population coverage and consequent increase in child access to healthcards.

### 182 GENDER MODIFIES THE EFFECT OF SOCIOECONOMIC FACTORS IN THE OCCURRENCE OF METABOLIC SYNDROME

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**Introduction:** Low socioeconomic status is associated with increased risk of morbidity and mortality from cardiovascular diseases. Metabolic syndrome is associated with increased risk of cardiovascular diseases such as myocardial infarction and Type 2 diabetes.

**Objective:** To evaluate the association between metabolic syndrome and socioeconomic factors in a representative sample of community Portuguese adults.

**Methods:** We evaluated a random sample of 1824 subjects (1125 women and 699 men), aged 18–92 years, living in Porto, Portugal. All participants completed a structured questionnaire comprising information on social, demographic (education, occupation, marital status) behavioural, and clinical aspects. Residence was considered according to town districts, an administration division that can be regarded as an additional surrogate of socioeconomic class. Anthropometrics and blood pressure were recorded and a fasting blood sample collected. Metabolic syndrome was defined (after the Third Report of the Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults) as the presence of three or more of the following characteristics: waist circumference  $> 102$  cm in men and 88 cm in women, triglyceride levels  $\geq 150$  mg/dl, high density lipoprotein cholesterol  $< 40$  mg/dl in men and  $< 50$  mg/dl in women, blood pressure  $\geq 130/85$  mm Hg, and serum glucose  $\geq 110$  mg/dl. Data were analysed separately for men and women. Proportions were compared by  $\chi^2$  test and odds ratio (OR) computed using unconditional logistic regression.

**Results:** In females, metabolic syndrome was more common in those less educated (OR=2.8, 95% confidence interval (CI) 1.81 to 4.41), unemployed (OR=2.1, 95% CI 1.37 to 3.28), and residing in the poorest of the evaluated districts (OR=2.64, 95% CI 1.26 to 5.52). In males, there was a crude association of metabolic syndrome with unemployment (OR=1.7, 95% CI 1.10 to 2.66), but after age adjustment this association disappeared.

**Conclusions:** This study provided evidence for a gender effect on the association between socioeconomic status and the presence of the metabolic syndrome. Only women showed an increased risk of metabolic syndrome with less favourable socioeconomic conditions.

### 183 ASSESSMENT OF AN INTEGRATED CURRICULUM ON EVALUATION OF HIV/AIDS CONTROL PROGRAMMES: A PROMISING BRAZILIAN EXPERIENCE

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**Objective:** To describe the curriculum development of a course on evaluation of programmes aiming to control endemic processes, emphasising sexually transmitted disease (STD)/AIDS prevention and control.

**Description:** The Brazilian PN evaluation effort is a recent recognised experience. As a strategy to institutionalise evaluation activities within PN, a multi-institutional course was developed involving the Brazilian PN ENSP/FIOCRUZ and the GAP/CDC. Assuming that evaluation is a systematic assessment of worth and merit and that it may provide guidance for improvement, accountability, and information to increase the understanding of the processes under study, this course aims to train evaluators through an integrated curriculum. Thus, the course was developed based on three approaches: (a) a national workshop with state representatives from the STD/AIDS programmes to formulate a range of expected competencies in evaluation, according to cognitive, practical, and ethical dimensions; (b) five workshops involving evaluation and curriculum development specialists to build the course content and units and their respective activities; and (c) the establishment of a permanent process for a course meta-evaluation. The curriculum integrative axis was given through the conception of evaluation as a "hands on" process that encompasses research, development, and dissemination. Lessons learned: This is an ongoing experience and up to now it has provided: (a) a relevant international, multi-institutional, and multidisciplinary experience; (b) a complex and rich interface between the academic community and evaluation practitioners; (c) an effective exchanging process between teachers and students; and (d) a promising national effort to apply evaluation in prevention and control programmes of endemic/epidemic diseases.

**Recommendation:** This first experience is important in order to provide national training and leadership for advancing the practice of evaluation as applied to the control of endemic and epidemic processes.

### 184 AETIOLOGY AND CLINICAL COURSE OF SPORADIC CASES OF BACTERIAL MENINGITIS

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**Introduction:** After the introduction of *Haemophilus influenzae* type b conjugated vaccines, the epidemiology of acute meningitis is changing in developed countries, with *Neisseria meningitidis* and *Streptococcus pneumoniae* now being the two most common agents. As antibiotics are frequently prescribed before diagnosis, the use of new techniques such as PCR for bacterial DNA detection is increasingly justified in culture negative samples.

**Objective:** To evaluate in an urban area the clinical findings in meningitis cases according to aetiological agents.

**Methods:** The study covers the period from January 2001 to February 2004. Diagnosis of meningitis was based on cerebrospinal fluid (CSF) pleocytosis. All samples were cultured in standard bacteriological media, capsular antigenic detection was used, and for some CSF negative samples application of a PCR test for detection of the aetiological agents was also performed. Several clinical variables were analysed comparing between the two most common agents.

**Results:** Diagnosis of sporadic bacterial meningitis was performed in 135 patients, ages ranging from 3 months to 81 years (mean age 25 years) of which 65 (48%) were younger than 15 years and 84 (62%) were males. CSF was purulent in 108 (80%) samples with pleocytosis ranging from 1035–25790 (mean (SD) 4469 (5069)) and in 27 CSF pleocytosis was less than 1000 cells. Diagnosis was based in standard bacteriological media in 61 (64%), by non-culture methods in 27 patients (molecular techniques in 22 and antigenic agglutination in five) and by both methods (culture and PCR) in 20 patients. In 108 patients (80%) an aetiology was established. Agents identified were *S. pneumoniae* in 44 and *N. meningitidis* in 41 (serogroup C in 15, B in 6, A in 1 and not identified in 19). Less common agents occurred in 23 patients, including five cases of *H. influenzae*. In 27 patients, no agent was identified by culture, and PCR was negative in nine; 15 patients

(11%) had taken prior antibiotics. Comparing the two most frequent agents there was no difference in sex incidence nor in clinical severity justifying ICU admission. *N. meningitidis* was more common in children younger than 15 years and *S. pneumoniae* was the agent more frequently associated with stupor/coma, seizures, focal neurological deficits, and a subacute co-morbidity. Case fatality rate was 5%.

**Conclusions:** With a combination of standard bacteriological methods and molecular techniques it is possible to identify an aetiological agent in the majority of cases (80%). Case fatality rate is low (5%). Following the introduction of the *H. influenzae* b conjugated vaccine, meningitis by this agent is very unusual.

### 185 PROFILE OF TESTING AND COUNSELLING CENTRES IN THE STATE OF SÃO PAULO

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**Introduction:** Although rather late for detecting routes of HIV transmission, given the long incubation period of the disease, the surveillance of AIDS cases has conveyed important information upon which programme actions have been based. The information system of testing and counselling centres (CTA) in the state of São Paulo enables the identification of the profile of users focusing both on the level of infection of HIV/STD, and on other behavioural aspects.

**Methods:** A sample of 20 823 users from 19 CTA of the state of São Paulo, Brazil during January 2002 to December 2003 was analysed. We report the social and demographic and behavioural data and seropositivity for HIV, hepatitis B, and syphilis.

**Results:** Of the 20 823 users, 53.1% were men and 46.9% women. The most frequent age group was 20–29 years. Approximately 47% of the users had between 8 and 11 years of schooling. Regarding marital status, 63% of men and 46% of women were single. The proportion of married women and widows was higher than for men. The population categories most frequently stated by women and men were respectively: 91.5% and 76% general population, 4.8% and 1.5% sex professionals, and 0.4% and 1.8% drug users. There were 16% classified as men who have sex with men. Of the total of sex professionals, 83.7% reported having used a condom with their last client; 60.4% of women and 32.4% of men reported only one sexual partner in the past year and 48.6% of the total sample reported at least one occasional sexual partner during the period. Less than 30% of respondents reported having used condoms in previous intercourse with non-steady partners. Among intravenous drug users, 35.6% shared non-sterilised needles or syringes. The proportion of seropositives among the 20 823 individuals was 1.9% (398) for hepatitis B, 2.5% (511) for HIV/syphilis, and 2.7% (565) for HIV. The male/female ratio was roughly 2:1 for all three infections.

**Conclusions:** The proportion of users from the general populations points toward the awareness of society in relation to the possibility of an HIV infection. Although disease surveillance systems do not allow for prevalence estimates, they enable collection of new data that may help implement more specific and effective measures of prevention.

### 186 CANCER CLUSTERING AROUND AN ILLICIT INDUSTRIAL WASTE DUMP

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**Introduction:** In 2002, two nurses reported an unexpectedly high number of cancers in a small rural community of 300 persons in southern Belgium. A small dump of industrial wastes, illegally laid down in the vicinity since 1989, was suspected to be the cause of this increased incidence. Benzene, in unknown quantity, had probably been deposited for a few months in the dump before being removed.

**Objective:** This paper reports the results of (a) an epidemiological analysis conducted to ascertain the increased incidence of cancer, and (b) measurements of environmental pollution carried out in 2003 to establish a possible causal relationship.

**Methods:** The expected number of incident cases was computed using indirect standardisation. Person time for each 5 year age group was calculated from data provided by the local registry office. As data reliability of the Belgian cancer registry is questionable, reference rates were based on the 25th, 50th, and 75th centiles of the distribution of the International Agency for Research on Cancer incidence rates for the

period 1988–92. Samples collected in the disposal area, in surface and underground waters, and in soils were analysed for polycyclic aromatic hydrocarbons (PAH), mineral oils, and metals (Cr, As, Ni, Be, Cd, Cu, Hg, Pb, Zn). Volatile organic compounds, especially benzene, were also measured in air samples. Radioactivity measurements were also carried out.

**Results:** Thirty-one cancer cases were reported, of which five were leukaemia and six breast cancers. Strikingly, no lung and digestive cancers were observed. An independent oncologist has certified 23 of these cases (74%). The observed number of cancers was 1.5–2 times higher than the expected incidence. However, a significantly increased incidence was only observed in women. The analysis of possible bias suggests that increase in cancer incidence could be underestimated. The number of leukaemia (ICD-9: 204–208) and, especially that of myeloid leukaemia (ICD-9: 205) case was 10 times higher than the expected value ( $p < 0.05$ ). In contrast, the incidence of breast cancer (ICD-9: 179) was not significantly increased. Soil contamination by metals increases with depth, demonstrating past pollution. However, there is presently no danger for agriculture because of the low soil content of metals at root depth. Surface water and upper layers of underground waters are polluted by mineral oils, PAH, and metals. Deep wells do not appear to be contaminated. No air pollution by benzene could be highlighted.

**Conclusions:** A higher incidence of cancers, especially leukaemia, has been confirmed in this area. Present environmental pollution is not a potential risk factor. The temporary deposit of benzene and/or exposure to PAH and carcinogenic metals could be the causes of this cancer clustering.

### 187 JOINT EFFECT OF RADIATION AND DIET ON CANCER RISK

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**Introduction:** Ionising radiation is a known risk factor of cancer, while fruit and vegetables consumption is thought to reduce the risk of cancer.

**Objective:** To investigate the joint effect of a diet rich in fruit and vegetables against the long term effects of radiation exposure on the risk of cancer.

**Methods:** A cohort of 36 228 atomic bomb survivors of Hiroshima and Nagasaki, for whom radiation dose estimates were currently available, had their diet assessed in 1980. The follow up period for cancer mortality was 20 years. The joint effect of fruit and vegetables intake and radiation exposure on cancer risk was examined, in additive (sum of effects of diet alone and radiation alone) and multiplicative (product of effects of diet alone and radiation alone) models.

**Results:** In the additive model, a daily intake of fruit and vegetables significantly reduced the risk of cancer deaths by 13%, compared with an intake of once or less per week. Radiation exposure of 1 Sievert (Sv) increased significantly the risk of cancer death by almost 50%. The additive joint effects showed a lower risk of cancer among those exposed to 1 Sv who had a diet rich in vegetables (49%–13%=36%) or fruit (48%–13%=35%). The multiplicative model gave similar results. Vegetables resulted in a decrease in cancer risk in exposed persons: from 52% (effect of radiation alone) to 32% (product of effect of vegetables and radiation), and fruit caused a cancer risk reduction from 52% (radiation alone) to 34% (product of effect of fruit and radiation). There was no significant evidence to reject either the additive or the multiplicative model.

**Conclusion:** A daily intake of fruit and vegetables is beneficial to persons exposed to radiation in reducing their risks of cancer death.

### 188 SOCIODEMOGRAPHIC DETERMINANTS OF REPEATED MEDICAL TERMINATIONS OF PREGNANCY (MTP)

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**Introduction:** Medical terminations of pregnancy (MTP) were legalised in Italy in 1978 with the aim of reducing the health risks of women caused by the practice of clandestine abortions. Women seeking an abortion must go to a physician, an obstetric/gynaecological clinic or a family advisory centre (Italian National Health Service structures designed to promote reproductive health) in order to obtain the necessary certification. In all cases, healthcare personnel are required to offer counselling and health education concerning contraceptive techniques.

**Objectives:** To investigate the phenomenon of repeated medical terminations of pregnancy (MTP) in the Abruzzo region of Italy with

**Table 1** Multiple logistic regressions for MTP – 2001

| Determinants           | OR   | 95% CI       |
|------------------------|------|--------------|
| Age (years) ≤ 19       | 1.0  |              |
| 20–29                  | 4.8  | 2.2 to 10.5* |
| 30–39                  | 5.9  | 2.6 to 13.3* |
| 40–44                  | 5.8  | 2.5 to 13.7* |
| 45–49                  | 17.0 | 5.0 to 57.5* |
| >49                    | –    | –            |
| Citizenship            |      |              |
| Italian                | 1.0  |              |
| Non-Italian            | 2.4  | 1.8 to 3.3*  |
| Educational level      |      |              |
| None or primary school | 1.0  |              |
| Middle school          | 1.1  | 0.7 to 1.6   |
| High school            | 0.8  | 0.5 to 1.2   |
| University             | 0.8  | 0.5 to 1.5   |
| Marital status         |      |              |
| Married                | 1.0  |              |
| Single                 | 0.4  | 0.3 to 0.6*  |
| Separated or divorced  | 0.6  | 0.4 to 1.0   |
| Number of children     |      |              |
| None                   | 1.0  |              |
| 1–2                    | 4.3  | 3.0 to 6.0*  |
| ≥3                     | 5.9  | 3.9 to 9.1*  |
| Family Advisory Centre |      |              |
| No                     | 1.0  |              |
| Yes                    | 0.6  | 0.4 to 0.9*  |

\* $p < 0.05$

reference to the possible sociodemographic determinants of the women and the role of family advisory centres in preventing MTP.

**Methods:** We used data concerning the notifications of MTP performed in Abruzzo in the period 1990–2001, archived on the basis of a standardised coding system. The associations between the sociodemographic variable of the women (age, citizenship, educational level, marital status, number of children), recourse to a family advisory centre and MTP were evaluated by means of multiple logistic regressions.

**Results:** The number of MTPs performed in Abruzzo between 1990 and 2001 was 35 856. Although the annual absolute number of MTPs decreased during the observation period (from 3593 MTPs in 1990 to 2645 in 2001), the percentage of women undergoing repeated MTP remained relatively constant at an average of 22.7 (1.1)%.

Multiple logistic analysis (Table 1) showed that the women at greatest risk of MTP are older, non-Italian, married, and have a larger number of children. Furthermore, as recourse to a family advisory centre seems to have a protective effect (OR=0.6) against MTP, it is recommendable that their counselling and health promotion activities are strengthened.

### 189 INFLUENCE OF DEMOGRAPHIC-BIOLOGICAL AND SOCIOCULTURAL DETERMINANTS IN CHILDREN'S AND YOUNGSTERS' PHYSICAL ACTIVITY LEVELS

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**Introduction:** Physical activity and practising sports seem to be the most important behaviour to promote an active and healthier lifestyle and to prevent a substantial amount of risk responsible for some chronic diseases. This behaviour is due to an interaction between someone's genetic inheritance, family, and schooling (teaching active lifestyles) as well as the influence of some factors upon such relationship.

**Objectives:** To determine parental influence over the levels of their children's physical activity and sports performances, as well as the influence of other important determinants of this relationship (the family social and economic status, schooling, sex, children's age, and influence of siblings, friends, or even their Physical Education teacher).

**Methods:** The sample included 5850 children and teenagers, male and female, aged 10–19 years, attending basic and secondary schools. The assessment of physical activity and sports performances was based on the Baecke *et al.* (1982) questionnaire, which enables estimation of the rate of total physical activity, as well as the different types of physical activity (work/school, sports, leisure). The statistical procedures included the  $\chi^2$  test, analysis of variance, and logistic and

multiple regression. Data processing was performed by SPSS 10.0 statistical software.

**Results and conclusions:** The main results and conclusions were as follows: (a) parents' participation in sports has a huge impact on their offspring's participation and interest; (b) parents with high physical activity levels have, especially in basic and secondary schools, offspring with the same high physical activity levels; (c) the family and peers were considered determinants of children's and youngsters' physical activity levels; (d) the demographic and biological influences (age, sex and socioeconomic status) and sociocultural determinants (parents' sport participation, and the influence of siblings, peers, and Physical Education teacher), did not remain constant along the different grades of children's and youngsters' physical activity levels.

### 190 CLINICAL CARE OF MEN LIVING WITH HIV/AIDS, WHO HAVE SEX WITH WOMEN, IN SÃO PAULO, BRAZIL

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**Introduction:** The care of people living with HIV/AIDS in Brazil, following guidelines issued by National Ministry of Health, has brought about a significant reduction in the morbidity and mortality associated with this retroviral infection. However, as far as different population subgroups are concerned, particular care needs may still not be met by current interventions.

**Objective:** This study focused on men living with HIV/AIDS, who have sex with women, aiming at evaluating care provided to them in reference centres in São Paulo city, according to patients' own perspectives.

**Methods:** From October/2001 to February /2002, 250 men were interviewed at the STD/AIDS Reference Centre of the STD/AIDS São Paulo State Programme and the University of São Paulo Medical School AIDS Clinic. Patients were selected by consecutive sampling of those who recognised themselves as men who have sex with women (MSW) and answered a standardised questionnaire on disclosure of HIV diagnosis, health professionals' attitudes at time of diagnosis, clinical follow up, and use of antiretroviral therapy (ART).

**Results:** Studied patients were mostly white men (58%), with a mean schooling of 9 years and 60% reported being employed. Mean (SD) time since HIV diagnosis was 60 (48) months and testing was most often carried out in HIV/AIDS centres (46.9%). Nevertheless, only 27% of interviewees had received pre-test counselling (15.9% were not even told that they were being tested). Counselling was associated with the site of testing, occurring less often at private laboratories and blood banks. With regard to professionals' attitudes at time of HIV diagnosis, even though 63.3% felt supported, negative attitudes, such as indifference, discrimination, or criticism were mentioned by 15.1%, 4.5%, and 2.5% of patients, respectively, and were associated with longer time to diagnosis. Mean time interval between diagnosis and admission at an HIV care centre was 2.5 weeks. ART was being given to 92% of interviewees, and most of them reported that therapy interfered with their everyday lives. Patients evaluated their care centres favourably overall, in spite of reports of discrimination or humiliation in these sites in 5.2% and 4.8% of interviews (versus 23.4% and 14.9% in other contexts).

**Conclusions:** The study points out for the need to enhance care of men living with HIV/AIDS, who have sex with women, particularly in regard to training of the healthcare team involved in HIV diagnosis and in clinical follow up of these individuals.

### 191 LOW BACK PAIN IN GENERAL PRACTICE: PATIENT PROFILE

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**Introduction:** Low back pain is the second most frequent symptom prompting people to consult a physician (after upper respiratory airway disorders), but it is difficult to analyse because of its high diagnostic variability and uncertain classification.

**Objective:** To define the characteristic profile of people with low back pain in the field of general practice.

**Methods:** This longitudinal study was based on the information contained in the Health Search database, which was collected by means

**Table 1** Odds ratios for the individual explanatory variables

| Gender                  | Low back pain | Radiculopathy | Disco-pathy |
|-------------------------|---------------|---------------|-------------|
| Females                 | 1.0           | 1.0           | 1.0         |
| Males                   | 1.6*          | 0.8*          | 0.9         |
| Age (years)             |               |               |             |
| ≤ 35                    | 1.0           | 1.0           | 1.0         |
| 36–55                   | 0.9           | 1.1           | 2.9*        |
| 56–65                   | 0.6*          | 1.9*          | 3.2*        |
| >65                     | 0.6*          | 2.0*          | 3.4*        |
| Examinations            |               |               |             |
| Yes                     | 1.0           | 1.0           | 1.0         |
| No                      | 0.6*          | 1.3*          | 2.3*        |
| Symptom duration        |               |               |             |
| Only at the first visit | 1.0           | 1.0           | 1.0         |
| <4 weeks                | 0.8           | 1.2           | 1.8*        |
| ≥4 weeks                | 0.5*          | 1.6*          | 2.3*        |

\*p<0.05

of a computer network system and concerned the clinical activities of two groups of general practitioners: an experimental group (Abruzzo) that had participated in a study of a low back pain diagnostic and therapeutic protocol and a control group not involved in the study. The data refer to the period 2000–2003. The number of cases observed was 5290, divided into five diagnostic categories: low back pain, discopathy, radiculopathy, facet syndrome, and other. The characteristic patient profile was evaluated by means of a logistic regression model, with diagnosis as the outcome variable (see table).

**Results and conclusions:** The incidence of low back pain in 2003 was 31.1 cases per 1000/year in the Abruzzo sample and 54.2 in the control sample. The distribution of the patients by diagnosis indicates that low back pain is more probable in younger patients, while radiculopathy and discopathy become more likely with increasing age. The duration of symptoms and the probability of undergoing instrumental examinations were less in the patients with low back pain than in those with the other two specific diagnoses (table 1).

### 192 BREAST CANCER IN RELATION TO OCCUPATION AND BIOMARKERS

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**Introduction:** Breast cancer is the most common tumour among women in both developed and undeveloped countries. The aetiology is not fully understood apart from changes in the reproductive pattern. The steady rise in breast cancer rates has resulted in speculation about whether environmental and occupational exposures are important risk factors. Chemical carcinogens presumably cause cancer by producing genetic or epigenetic damage. Two classes of genes that play a central role in the carcinogenesis process are oncogenes and tumour suppressor genes.

**Objective:** To investigate the relation between occupations and the risk of breast cancer, and to evaluate the relation between the biomarkers, namely the frequency of expression of the p53, p21, and c-erbB2 proteins in primary breast cancer tumours in relation to occupation and exposure.

**Methods:** The study population included 326 breast cancer patients (cases) hospitalised in Wolfson medical centre in the last 10 years and 413 healthy women (controls). We used telephone interviews to collect personal characteristics, occupational, exposure, and medical histories, health habits, and information on reproductive and hormonal history. Immunohistochemical staining was used to detect the biological markers in breast cancer sections.

**Results:** No significant difference was found in smoking habits and in the reproductive and hormonal history including hormonal therapy between the breast cancer patients and the controls. Significantly more breast cancer patients than controls had a family history of breast cancer. Elevated risk for breast cancer was found among chemists, cosmeticians and hairdressers, textile workers, roentgen technologists, and cleaning women. Exposure to chemicals, hair colours, cleaning chemicals, textile colours, and pigments were associated with increased risk of breast cancer. Multiple logistic regression analysis showed that working in textile industries (OR=1.8, 1.1 to 3.0), or exposure to

ionising radiation (OR = 5.3, 2.0 to 14.1), and having a family history of breast cancer (OR = 2.7, 1.7 to 4.2) involved a significantly increased risk of breast cancer. Elevation of p53, c-erbB2, and p21 protein expression (positive cases) was found in 25%, 73.5%, and 33.3% of cases respectively. Of the c-erbB2 positive cases, significantly more breast cancer patients were exposed to hazardous substances at work. We did not find a relationship between the biomarkers p53, p21, and c-erbB2 examined in breast cancer tissue and specific occupations or exposures.

**Conclusion:** Our study supports the assumption that occupational exposure may contribute to the aetiology of breast cancer. Women working in the textile industry or exposed to ionising radiation may be at increased risk, and should be under medical surveillance.

### 193 SOCIAL SUPPORT SCALE: TEST-RETEST RELIABILITY IN BRAZILIAN PREGNANT WOMEN

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**Introduction:** In recent years much literature has reported on investigations into the association between social support and maternal and perinatal outcomes. The role of social support in pregnancy has yielded conflicting results. There are several structured measurement scales for measuring social support. In this study, Sherbourne and Stewart (MOS study) developed the instrument, which assessed social support. The Pro-Saude Study submitted this scale to standard translation procedures. A high level of reliability was found in the Pro-Saude Study.

**Objective:** To evaluate the reliability of a multidimensional social support scale in a first stage of a pre-eclampsia case-control study.

**Methods:** Test-retest reliability was measured in a group of 65 women who were hospitalised in a public maternity ward in Rio de Janeiro. The re-test interval varied from 1 to 7 days. Interclass correlation coefficient (ICC) and quadratic weighted kappa coefficients were used as agreement measures. Log linear statistical models were used to describe the patterns of agreement (or disagreement). Cronbach's alpha coefficient was estimated in order to assess the internal consistency reliability for the five subscales: material, emotional, affectionate, positive social interaction, and informational.

**Results:** The ICC of social support score was 0.90 (95% confidence interval (CI) 0.84 to 0.94). Weighted kappa statistics for the items ranged from 0.22 to 0.70. Log linear models that provided the best fit to the data were: diagonal agreement (D6, D9, D17 items), linear by linear association (D7, D16 items), diagonal agreement plus linear by linear association (D8, D13, D14, D15, D21, D24 items) and quasi-independence (D10, D11, D22, D23 items). None of the models provided a good fit for items: D12, D16, D18, D19, D20. Cronbach's alpha coefficient for the subscales ranged from 0.62 to 0.78. The alpha coefficients for the test were as follows: material 0.62, emotional 0.72; informational 0.70, affection 0.78, positive social interaction 0.76.

**Conclusion:** Despite the low values of kappa statistics for some items, a high level reliability of the social support scale was described and it may be taken to represent an excellent agreement. The internal consistency was considered adequate. The use of statistical models resulted in a more complete and meaningful analysis of agreement. The modelling approach provided a description of the structure of data agreement off diagonal. Pregnant woman tended to rate the social support items equally or similarly. High (low) ratings made on the first occasion tended to be associated with high (low) ratings in the second occasion. It was considered that this social support scale yielded high level of reliability in a pregnant population with a low educational level.

### 194 BIOMONITORING OF GENOTOXIC RISK IN WORKERS IN A RUBBER FACTORY

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**Introduction:** The production of rubber and rubber products is a large and diverse industry. A broad spectrum of chemical compounds belonging to many structural and use categories is employed during rubber processing (vulcanisation agents, accelerators, activators, colorants, solvents, etc.) usually at high temperatures. Some of these compounds have been shown to be carcinogenic.

**Objective:** To assess genotoxic hazard in rubber processing industry. Occupationally exposed group consisted of 32 workers (male) from a rubber plant in North Portugal. The control group comprised 32 persons matched for sex, age, and smoking habits.

**Methods:** Peripheral blood lymphocytes were analysed for micronuclei (MN) frequency to assess genotoxic effects. End of shift excretion

of global thioethers was measured by a spectrometric method for exposure assessment to electrophilic compounds, including carcinogen agents.

**Results:** Significant increase has been found for thioethers average concentration in the exposed group compared with the control group. MN occurred at higher frequencies in the exposed group than in controls although the difference was not statistically significant. A significant association between MN frequency and age was found. No association between tobacco smoke and analysed biomarkers was found.

**Conclusion:** Our data suggest that electrophilic compounds are present in the rubber industry environment; however, genotoxic effects resulting from occupational exposure were not conclusive.

### 195 VIOLENCE IN PORTUGUESE ADOLESCENTS: SOCIAL AND BEHAVIOURAL DETERMINANTS

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**Introduction:** Violence is a growing public health problem in adolescents, but the influence of social and behavioural factors remains unexplored and unclear.

**Objective:** To identify social, demographic and behavioural variables associated with involvement in violent acts among Portuguese adolescents.

**Methods:** We evaluated 7511 adolescents aged 15 to 19 years old (4243 females and 3268 males), enrolled in 16 schools, representing 16 out of 18 country district capitals. Information was obtained using an anonymous self administered questionnaire comprising social, demographic, and behavioural characteristics. Illicit drug use, alcohol and tobacco consumption was recorded according to four general categories: never, experimental, occasional, and regular use. For analysis, comparisons considered only never versus ever use. Violence was defined by admitting participation in fights during the previous month. The  $\chi^2$  test was used to compare proportions, and means were compared using one way analysis of variance. Odds ratios (OR) were calculated by unconditional logistic regression, to quantify the association between involvement in fights and alcohol, tobacco and drugs consumption, adjusted for age and parental education. The statistical analysis was performed separately for each gender.

**Results:** This study revealed that 595 (7.9%) adolescents admitted involvement in fights during the previous month (13.6% of males and 3.5% of females). Male adolescents involved in fights more frequently admitted tobacco consumption in the previous month (19.0% versus 10.4%,  $p < 0.05$ ) and alcohol intake (beer 14.1% versus 8.0%,  $p < 0.05$ ; wine 14.7% versus 11.1%,  $p < 0.05$ ; spirits 14.6% versus 6.8%,  $p < 0.001$ ). After logistic regression adjustment, beer (OR 2.0; 95% confidence interval (CI) 1.25 to 3.23), wine (OR 1.4; 95% CI 1.07 to 1.81), spirits (OR 2.4; 95% CI 1.59 to 3.62), cocaine (OR 2.6; 95% CI 1.78 to 3.82), heroin (OR 2.9; 95% CI 1.96 to 4.24), cannabis (OR 2.3; 95% CI 1.86 to 2.95), and ecstasy (OR 3.6; 95% CI 2.65 to 4.83) were significantly associated with being involved in fights. Although violence was less frequent and the estimates less stable, similar results were found for female students.

**Conclusions:** These cross sectional results support the hypothesis that consumption of tobacco, alcohol, or illicit drugs is associated with an increased risk of being involved in physical violence, regardless of sex, age, and parental education.

### 196 THE PRESTIGE OIL SPILL: ACUTE HEALTH EFFECTS IN CLEANING TEAMS FROM ASTURIAS AND CANTABRIA, SPAIN

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**Introduction:** On 19 November, 2002, the tanker *Prestige* split in two and sank 130 miles off the southwest coast of Finisterre. The crude oil arrived on the coast of Asturias on 6 December and later to Cantabria. Volunteers, seamen, hired workers, and bird cleaners got involved in cleaning activities, even though direct contact with fuel oil can cause acute health effects.

**Objective:** To evaluate the exposure conditions and acute health effects in people who participated in clean up activities.

**Methods:** A stratified random sampling process was performed in each autonomous community. The sample consisted of 400 subjects in each region. The number of cleaning days was added as a second criterion of stratification (greater or less than 5 days) in order to favour an over-representation of people who had spent longer periods cleaning. Weights had to be used in the analysis to correct the estimates. Trained personnel obtained information through assisted telephone interview. Data analysis was performed using the weighed estimates methods available in the Stata v 7.0 program. Significant differences between groups were evaluated via Pearson's  $\chi^2$ . Unconditional logistic regression was used to compute odds ratios (OR) and 95% confidence intervals.

**Results:** Risk factors significantly related with wounds were the number of activities performed (OR 3.32 for two activities and OR 4.49 for three or more); cleaning birds (OR 4.22), tearing protective equipment (OR 2.34), and the receipt of information after starting clean up activities (OR 8.77). Working more than 20 days in high level contamination areas, removing fuel from the sea, and bad smells were significantly associated with headaches (OR 2.62, 2.68, and 10.15). Female sex and clean up work for more than 20 days were significantly related with low back pain (OR 2.96 and 2.57). Itchy eyes were more prevalent among those who performed three or more activities (OR 8.84), ate while in contact with fuel oil (OR 3.46), and reported bad smells (OR 33.42). An increased risk for neurovegetative disorders was found for those who worked longer periods in highly contaminated areas (OR 2.50); tore gloves (OR 2.87), and reported head/neck and leg contact with fuel oil (OR 6.24 and 8.16). Respiratory symptoms were associated with working more than 20 days, building floating barriers, cleaning activities at sea, and tearing gloves (OR 3.74, 3.57, 3.36, and 3.32).

**Conclusions:** No severe disorders were identified among people who performed these tasks. However, the potential health impact should be considered when organising clean up activities in similar environmental disasters.

#### 197 THE SOBRAL SURVEY ON HEALTH, EDUCATION AND QUALITY OF LIFE OF CHILDREN AGED 5–9 YEARS IN URBAN SETTINGS OF SOBRAL, CEARÁ, BRAZIL, 1999–2000: SOCIAL AND ENVIRONMENTAL CONDITIONS

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**Introduction:** It is crucial to know the population's social, demographic and environmental conditions in order to plan, and execute public health policies. Many studies have shown its impact on the people's well being and on the health and disease related process.

**Objective:** To investigate the social, demographic, and environmental conditions of children aged 5–9 years.

**Methods:** A cross sectional study was designed to interview mothers, preferably, or another adult at home. A stratified probability sample, by year of birth (from 1990 to 1994) allowed the selection of 3444 children, aged 5 to 9 years, from a dataset of all families with children in this age living in the urban area of the city. These data were originated from an official form of the city's Family Health Programme, completed by the community health workers. Only one child per home was allowed to enter the study randomly. From the total sample, a sub-sample of children was randomly selected for clinic and laboratory examinations. Data were collected from November 1999 to October 2000, by trained interviewers, using a pre-tested semi-structured questionnaire. The study's variables were the children's age, gender, race, and religion; sanitation, crowding, and type of urbanisation; existing social facilities and their distance from the houses.

**Results:** Public clean water, sewage disposal, and garbage collection were available for 94.4%, 56.3%, and 77.8% respectively. Per capita family wage was less than US\$82.00 monthly. There were 27.8% of families that lived in houses with more than two people per room. Parental schooling was very poor; 50% were illiterate or had been at school for only a short time. From the studied children, 50.1% were males, 72.5% were black or coloured, and 91.8% were attending school. Of the studied families, 71.7% and 77.9% live close to schools and health centres, respectively.

**Conclusion:** Although the study approached mostly very poor families with insufficient schooling, their children have good access to public

school and healthcards. This study allowed the municipal policy makers to identify the population facing health and social risks and therefore to plan and develop public interventions based on epidemiological data.

#### 198 HEALTH IMPACT ASSESSMENT OF AIR POLLUTION: EXPERIENCE IN POLAND

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**Introduction:** Numerous epidemiological studies point clearly and consistently to association between concentration of air pollutants and adverse effects on human health even at low levels of exposure. The magnitude of the effect is rather small compared with other risk factors; nevertheless, widespread exposure may significantly affect public health. For policy makers and public health authorities, an excess risk of death expressed by scientific measures (relative risk) requires some translation before the effect on public health becomes clear.

**Objective:** To quantify the public health impact of the exposure to air pollution in Cracow in terms of measures taken in public health.

**Material and methods:** Exposure to air pollution was estimated on the basis of ambient concentrations provided by the existing monitoring network for the year 2000. Impact of different fractions of particulate matter on human health was considered in terms of both total and cause specific mortality. Quantification of the health impact for the exposure to the air pollutants was based on the population attributable risk proportion and years of life lost concept, and followed the methodology developed by the APHEIS group. The different HIA scenarios were chosen for assessing expected benefits from the reduction of the air pollution level. These scenarios were related to limit values for particulate matter that should not be exceeded in 2005 and 2010.

**Results:** In the year 2000, 6576 inhabitants of Krakow died in the city. Although the PM10 annual mean was 32.1  $\mu\text{g}/\text{m}^3$ , 265 days exceeded 20  $\mu\text{g}/\text{m}^3$ , and this was associated with 50 short term deaths/year that could be prevented. The benefits doubled for the cumulative effects up to 40 days of short term exposure. Even PM10 reduction by 5  $\mu\text{g}/\text{m}^3$  would lead to a decrease of 18 short term deaths from all causes, including 14 cardiovascular deaths per year. The reduction of black smoke gives a slightly greater concern (55 annual short term deaths, including 19 from cardiovascular diseases). The expected benefits of reduced mortality in the long term exposure if, according to the European directives for 2010, annual mean levels of PM10 are reduced to 20  $\mu\text{g}/\text{m}^3$ , are of great significance. About 500 attributable mortality cases could be avoided. Even reduction of PM10 annual mean by 5  $\mu\text{g}/\text{m}^3$  would save 128 deaths attributed to chronic effect of exposure by year.

**Conclusion:** The results of HIA show the benefits of reducing particulate matter exposure on a local scale. The analysis should indicate to local policy makers that even very small reductions in air pollution concentration impacts on public health and should justify further preventive measures.

#### 199 THE IMPACT OF WATER QUALITY ON ACUTE DIARRHOEA IN TWO NEIGHBOURHOODS IN THE MUNICIPALITY OF TABOÃO DA SERRA, SÃO PAULO, BRAZIL

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**Introduction:** Acute diarrhoea (AD) is a contributing factor to most infant deaths in Brazil. In 2003, it was responsible for 126,000 hospital admissions of children under 5 years of age. In the past 2 decades, several studies have reported the relevance of socioeconomic and environmental factors in the origin of AD. Unfortunately, despite this knowledge and governmental measures to assure basic sanitation conditions, the problem has not been appropriately addressed or solved. In the municipality of Taboão da Serra, specifically the neighbourhood of Sílvio Sampaio, the water supply is intermittent because of the variations in pressure and distance from downtown. The variations are technically known as "end of net". This forces the neighbourhood to frequently search for alternative water sources (wells and springs).

**Objectives:** To correlate water quality and the frequency of AD, within two different neighbourhoods in Taboão da Serra over a 1 year period. The data were gathered from two regions, the Local Health Unit (LHU) Sílvio Sampaio, which is located in the neighbourhood of Sílvio Sampaio, the previously mentioned "end of net" neighbourhood. The second source of data was gathered from the LHU Taboão da Serra, which is located downtown and is not affected by intermittent water supply.



**Methods:** Over a 1 year period, the water quality of the two regions was evaluated. Samples were collected from wells and springs and tap water from Silvio Sampaio as well as samples of tap water were collected from Taboão da Serra. A microbiological evaluation adhering to the rules established by the Health Ministry was performed. Data were also collected about AD in children under 5 years old in LHU Silvio Sampaio and in Taboão da Serra.

**Results:** The number of patients examined with AD in LHU Silvio Sampaio was four times greater than in LHU Taboão da Serra. This is quite a significant difference ( $p < 0.001$ ). Of the samples collected in Silvio Sampaio, only the tap water samples were considered potable for human consumption. The tap water samples collected in Taboão da Serra were very suitable for human consumption. Silvio Sampaio and Taboão da Serra have the same social, economic, and populous conditions.

**Conclusion:** The data above provide a definite correlation between water quality and the higher number of AD observed in the Silvio Sampaio neighbourhood. However, having a clean water supply is not the only factor that prevents acute diarrhoea. Intermittent water supply forces people to search for other water sources that may be contaminated. The data support the need for public health interventions to improve the water supply and provide educational programmes to community members that articulate the risks associated with using alternate water sources.

## 200 TRENDS IN THE AIDS EPIDEMIC AMONG INJECTING DRUG USERS IN THE CITY OF SÃO PAULO

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**Introduction:** The objective was to analyse trends in incidence and mortality due to AIDS in the city of São Paulo, in adult injecting drug users (IDU), older than 13 years, from 1985 to 2002, by gender and age. Studies on trends are important epidemiological tools and allow future insights.

**Methods:** Study performed with data from new cases of AIDS and deaths, reported to the Epidemiological Surveillance of the São Paulo State STD/AIDS Programme. Trends in 8,670 new cases of AIDS, with 5750 deaths in the IDU category, were estimated using polynomial regression models, with 95% confidence intervals. The softwares Epi-Info 6.04d and Stata 6.0 were used.

**Results:** Trends in the incidence of IDU and men who have sex with men (MSM) groups increased until 1993 and decreased thereafter; trends grew from 1998 for the heterosexual category. Polynomial second order models were the best adjusted for trends in incidence for IDU ( $\text{LnY} = 7.07 + 0.12X - 0.05X^2$ ) with  $r^2 = 0.91$  and  $p < 0.001$ . The best adjusted models for new AIDS cases in men, in all age groups, were second order equations ( $\text{LnY} = (\beta_0 + \beta_1X + \beta_2X^2)$ ), and were statistically significant. Among females the best adjusted models in the under 30 years age group were ( $\text{LnY} = 4.83 + 0.06X - 0.06X^2$ ) with  $r^2 = 0.88$  and  $p < 0.001$ , and for above 30 years, they were ( $\text{LnY} = 4.57 + 0.18X - 0.04X^2$ ) with  $r^2 = 0.96$  and  $p < 0.001$ . Mortality trends in the IDU group increased until 1994 and decreased thereafter and the best models were also of second order ( $\text{LnY} = 6.72 + 0.15X - 0.06X^2$ ) with  $r^2 = 0.93$  and  $p < 0.001$ . For IDU, male mortality trends increased until 1992 and then declined. The best adjusted model for deaths under the age of 40 years was ( $\text{LnY} = 6.44 + 0.02X - 0.07X^2$ ) with  $r^2 = 0.92$  and  $p < 0.001$  and above age 40 years was ( $\text{LnY} = 4.12 + 0.14X - 0.05X^2$ ) with  $r^2 = 0.90$  and  $p < 0.001$ . Female mortality models for the under 30 years group were ( $\text{LnY} = 4.41 + 0.04X - 0.06X^2$ ) with  $r^2 = 0.94$  and  $p < 0.001$  and for the older than 30 years group were ( $\text{LnY} = 4.16 + 0.04X - 0.05X^2$ ) with  $r^2 = 0.96$  and  $p < 0.001$ .

**Conclusions:** The IDU exposure category presented the clearest evidence of declining incidence trends after 1993, affecting mainly the age group from 20 to 29 years in both genders. Mortality trends in IDU and MSM groups grew until 1993 and until 1995 for heterosexuals. The number of deaths due to AIDS in men increased until 1992 among IDU and MSM, and until 1993 in heterosexuals. There was a clear decreasing mortality after policy makes introduced free highly active antiretroviral therapy in the city of São Paulo, as of 1996.

## 201 EPIDEMIOLOGICAL SURVEILLANCE OF CONGENITAL SYPHILIS IN THE STATE OF SÃO PAULO 1989-2000

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**Introduction:** Since 1986, there has been compulsory notification of congenital syphilis (CS) in Brazil. With the 1992 project to eliminate this disease in the Americas, major efforts have been conducted in the state of São Paulo to implement the epidemiological surveillance system.

**Objectives:** To identify: (a) trends in the incidence of cases of CS, and (b) the proportion of childbirth public services in the state of São Paulo that notified cases of CS to the epidemiological surveillance system.

**Methods:** For this study, 7543 cases of CS notified to the surveillance system were analysed and then compared to the number of the childbirth public health services that notified cases from 1989 to 2003. Cases of CS were distributed by the 24 state regional health departments and by year of notification. Incidence coefficient rates were calculated per 100 000 born alive from 1994 to 2000.

**Results:** In the state of São Paulo the incidence of CS increased from 52.06 per 100 000 live births in 1994 to 159.35 per per 100 000 live births in 2000. Notifications of CS from maternity wards represented around 15% of those for the whole state, which shows that there is a significant sub-notification rate. The regional health department responsible for the high notification rate was the city of São Paulo reporting around 75% of the cases.

**Conclusions:** The number of notifications of CS and of hospitals/maternity wards reporting cases has gradually increased in the state of São Paulo. Some regional health departments in the state, even with a significant number of maternity wards, had not notified cases of CS or notified little. Low notification rate may be a result of: (a) a good prenatal care indicating that a mother with syphilis has been adequately treated; (b) diagnosis of CS at childbirth not performed, which frequently occurs; or (c) failure in reporting cases of CS to the epidemiological surveillance system. This shows the need to intensify the implementation of CS surveillance in maternity wards. The increase in the incidence of cases of CS indicates essentially that there was an improvement in performance of the epidemiological surveillance system and that this increase is not necessarily linked to a worse epidemiological situation of the disease.

## 202 EXPOSURE CATEGORY AND SCHOOLING IN CASES OF AIDS IN SÃO PAULO, BRAZIL

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**Introduction:** The AIDS epidemic is becoming increasingly "poor" with time, and schooling has been used as one of the markers of socioeconomic conditions for patients with AIDS.

**Objective:** The objective of the present study was to observe the differences related to schooling in the different categories of exposure to HIV in referred cases of AIDS.

**Methods:** Adults reported from January 1980 to December 2002 in the State of São Paulo, Brazil were analysed. The EPI-INFO 6.04d program was used to analyse data. Schooling ratios for heterosexuals and for injecting drug users (IDU; both men and women), and for homosexual men were calculated.

**Results:** There was a decrease in unknown level of education and in individuals with 1 to 3 years of schooling in all exposure categories, for both genders, with time. Homosexual men present the smallest proportions of illiteracy and the highest of individuals with 12 years or more of schooling, compared with heterosexuals and IDU of both genders. The most prevalent ranges of schooling for homosexual men, heterosexuals, and IDU were, respectively, 8 to 11 years, 4 to 7, and 1 to 3 years. Heterosexuals had a higher level of education than IDU. There was a very low proportion of individuals with a university degree among the latter. Regarding gender, women had a lower level of education than men. It is important to observe that although low, the proportion of individuals with 12 or more years of schooling remained relatively constant for heterosexuals with time.

**Conclusions:** There was a much higher proportion of individuals with a university degree among men than women, especially in the initial years of the epidemic, owing to the importance of homosexual men during this period. The data reinforce that HIV transmission due to injecting drugs is related to a less privileged part of the population. The male epidemic is clearly becoming "poorer", a fact not observed in women; the epidemic in women was "poor" from its beginning. It is noteworthy that there is a fairly constant proportion of university degree heterosexuals throughout time, which indicates that this segment of the population is also at risk of acquiring HIV, despite the trend of the epidemic to become "poorer".

### 203 COVERAGE AND COMPLIANCE FOR HEPATITIS B VACCINE AMONG STD PATIENTS OF THE SÃO PAULO STATE HEALTH DEPARTMENT STD/AIDS REFERRAL AND TRAINING CENTRE (CRT-DST/AIDS) IN 2001

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**Introduction:** Hepatitis B vaccination is one of the most effective prevention measures for the disease. Many studies have shown major coinfection rates for hepatitis B among individuals with STD. STD outpatients of the CRT-DST/AIDS with negative serology for hepatitis B have been referred for vaccination since 2000. The present study aimed to verify the prevalence of hepatitis B among STD patients and coverage and compliance to hepatitis B vaccination.

**Methods:** The prevalence of hepatitis B was extracted from the STD case report database for 2001. The CRT-DST/AIDS STD patient record number was used to check CRT hepatitis B vaccination in serology negative patients in the vaccine database. Epi6-versao 4 software was used for analysis.

**Results:** There was an 11.1% seroprevalence for hepatitis B among the 1200 STD outpatients. Of the 1067 serology negative users eligible for hepatitis B vaccination, only 386 (36.1%) took the first dose. Of the latter, 192 (50.1%) received a second dose, and only 92 (23.8%) completed vaccination.

**Conclusion:** The low coverage (36.1%) and compliance rate (23.8%) found for hepatitis B vaccine indicates the need to reformulate the service, especially in terms of patient referral to vaccination. Taking the first dose at the first appointment at the service, regardless of the result of serology, and taking into account the 11.1% prevalence rate, is a valid strategy from the cost-benefit point of view. In order to improve compliance, vaccination should be incorporated into the various opportunities for patients to contact the service, and absentee control in the vaccination service should be improved.

### 204 HABITUAL INTAKE OF FAT FOODS AND RISK FOR ORAL CANCER

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**Introduction:** Poor dietary patterns are associated with a broad extent of health damage, with increased risk for neoplasm in the upper digestive tract especially. Although the contribution of dietary fat to cancer development has not been fully elucidated, it is generally accepted that its high caloric content is an important modulator of carcinogenesis. The risk of cancer is also related with the ingestion of heterocyclic amines, a known food borne carcinogen, formed when meat is fried or cooked at high temperature. Low regular intake of fresh fruits and vegetables and high consumption of meats, fries, and other fat foods have been reported as associated with an increased risk for oral cancer. This study evaluated habitual intake of fat foods in the context of the Brazilian diet as risk factor for oral cancer using a case-control design.

**Methods:** We performed a case-control study involving 70 patients with oral squamous cell carcinoma in a major Brazilian hospital (Hospital das Clínicas, School of Medicine, University of São Paulo) and an equal number of controls assisted in the same setting for other conditions than cancer. Patients were paired for age, gender, and smoking habits, and matched by frequency of use of dental prosthesis. A food frequency questionnaire assessed dietary patterns with reference to 5 years prior to the diagnosis. Socioeconomic and clinical characteristics of patients were also assessed. Data analysis used conditional logistic regression.

**Results:** The fitting of a multivariate model explained 45.1% of the variation in the outcome variable. Increased risk for oral cancer associated with the habitual eating of sausage (once per week or more frequently, OR 3.87; 95% CI 1.25 to 12.04), soup (at least twice per week, OR 4.63; 95% CI 1.28 to 16.80), cheese (at least once per week, OR 6.80; 95% CI 1.65 to 28.02), and concurrent intake of bacon (at least twice per week) and fried food (at least four times per week) (OR 22.16; 95% CI 2.88 to 170.69). The model also comprised the adjustment for socioeconomic characteristics, with higher risk for those with monthly income lower than twice the Brazilian minimum wage (roughly corresponding to US\$170) (OR 3.77; 95% CI 1.26 to 11.25); and a protective factor for the consumption of margarine at least seven times per week (OR 0.12; 95% CI 0.02 to 0.56).

**Conclusion:** Habitual intake of fat food is significantly associated with increased risk of oral cancer. Besides having high fat content, sausages

in Brazil are usually served fried. Besides being usually served hot, which may harm the oral mucosa, soups in the Brazilian diet are rich in animal fat. Margarine is probably the most effective vehicle for vitamin A ingestion in the Brazilian diet, which may account for its indication as a protective factor, in spite of recent controversies regarding the use of beta-carotene supplements by smokers.

### 205 ANTHROPOMETRIC NUTRITIONAL STATUS AMONG ADOLESCENTS

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**Introduction:** The nutritional model of people in Bulgaria, especially among children and adolescents, was reflected negatively because of social and economic crises during the last 15 years. An anthropometric characteristic is an indicator for assessing personal nutritional status, and depends on the individual energy expenditure.

**Objective:** To analyse the nutritional status of adolescents by assessment of basic anthropometric parameters.

**Methods:** The study was carried out during May-June 2003 with 146 participants; 122 girls with mean (SDO) age of 16.12 (0.87) years and 24 boys aged 15.79 (0.93) years. Height and weight were taken by standard methods and compared with the Bulgarian norms. Body mass index, height for age, weight for age, weight for height, and relative body mass to ideal body mass were also determined. Individual energy expenditure was analysed by the chronometric table method during the morning (E1) and afternoon (E2) education periods and during weekend (E3). Results were processed by descriptive statistics and Student's *t* test.

**Results:** Of the subjects, 56.91% of girls and 58.33% of boys fell within the Bulgarian norms regarding level of physical development to their age by height and age. The assessment of BMI showed normal body mass among 96.75% girls and 87.5% boys. Overweight was found among three girls and three boys, and one girl was obese. Stature (cm) by age (P30÷P70) was found among 51 girls (41.46%) and 10 boys (41.67%). For girls versus boys, respectively, E1 was 2883.05 (270.47) versus 3230.87 (443.39) kcal,  $p < 0.001$ ; E2 was 2756.17 (282.27) versus 3054.87 (415.13) kcal; and E3 was 2754.34 (317.32) versus 3194.71 (464.32) kcal. Significant differences between E1, E2, and E3 were not found among boys but E1 was consistently higher than E2 and E3 among girls. The mean level of energy expenditure was higher than the recommended one for the corresponding age and sex group compared with the physiological norms. This possibly means that the chronometric table method is not precise enough.

**Conclusions:** Most of the investigated adolescents, who had been growing up during a severe economic crisis, have normal anthropometric characteristics. The chronometric table method of reporting on the individual energy expenditure needs improving.

### 206 ANTHROPOMETRIC COMPARISONS BETWEEN CHILDREN OF ROMANY AND BULGARIAN ORIGINS

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**Introduction:** Individual anthropometric status depends on genetical predisposition, but a large number of environmental factors can modify it: nutrition, economic situation, quality of life, family health culture, environmental damage. The economic stratification of society has intensified during the transition years in Bulgaria. The Romany population is one of the poorest and has the biggest health risk strata in this society.

**Objective:** To analyse the basic anthropometric indices among Romany and Bulgarian children at preschool age.

**Methods:** The following indices were analysed among 56 Romany (25 boys and 31 girls) and 77 Bulgarian (43 boys and 34 girls) children with mean (SD) age respectively of 4.73 (0.98) years and 4.61 (1.10) years during December 2003: height, weight, and circumferences of chest, wrist, hand, and hip, and length of limbs. All children attended two kindergartens situated close to each other. All examinations were performed by the same staff by standard methods.

**Results:** The following significant differences were found for Romany versus Bulgarian, respectively: height 103.79 versus 110.61 cm,  $p < 0.001$ ; weight 17.73 versus 19.55 cm,  $p = 0.002$ ; wrist circumference 11.49 versus 12.29 cm,  $p < 0.001$ ; forearm circumference 16.23 versus 17.03,  $p < 0.001$ ; leg length 57.47 versus 59.86 cm,  $p = 0.03$ ;

hand length 44.13 versus 46.24 cm,  $p=0.004$ ; and sciatic height 58.09 versus 61.18 cm,  $p<0.001$ . In this study, 77.92% of Bulgarians had physical development according to Bulgarian standards versus 44.64% of the Romany; 35.71% had retardation in height to age (2SD) versus 7.79% of Bulgarians, and 19.64% to age (3SD) versus 0% of Bulgarians.

**Conclusion:** Reliable and significantly better anthropometric characteristics were found among Bulgarian children and a high percentage of retardation physical development among Romany children.

## 207 THE DIAGNOSIS OF A SMOKING RELATED DISEASE IS A PROMINENT TRIGGER FOR SMOKING CESSATION IN THE GENERAL POPULATION

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**Objective:** The benefit of smoking cessation for health is beyond controversy; much of the damage caused by cigarette smoking can be averted if the detrimental habit is stopped. To understand what makes smokers try to quit and which smokers are more likely to be successful in quitting is an important prerequisite for the development of efficient smoking cessation programmes. The aim of our analysis was to study the impact of demographic factors, smoking patterns, and the occurrence of smoking related diseases on smoking cessation, with a particular emphasis on the temporal relationship between the diagnosis of smoking related diseases and smoking cessation.

**Methods:** A retrospective cohort study was carried out among 4575 ever smokers aged 50–74 years who participated in a general health screening examination in Saarland, a state in the southwest of Germany, from July 2000 to June 2002. Lifetime smoking, medical history, and demographic variables were obtained by a self administered questionnaire. Smoking cessation was defined as having successfully quit at the time of the examination. The association of demographic factors, smoking patterns, and diagnosis of major smoking related diseases with the rate of smoking cessation was evaluated using the extended proportional hazards model, allowing for time varying covariates. To further investigate the temporal relationship between diagnosis of major smoking related diseases and smoking cessation, disease diagnosis was not only evaluated in a dichotomous manner (yes or no), but additionally in a categorised manner, in which the time since diagnosis was accounted for (same year/1 year/2–10 years/>10 years).

**Results:** Of all subjects, 3059 had quit smoking at the time of the examination. Male gender, late onset of smoking, and high school education were predictive of cessation. However, the by far strongest predictors of cessation were diagnosis of smoking related diseases: relative cessation rates in the year of disease occurrence were 11.2 for myocardial infarction (95% confidence interval (CI): 8.9 to 14.0), 7.2 for stroke (95% CI 5.1 to 11.6), 2.5 for diabetes mellitus (95% CI 1.6 to 4.0) and 4.8 for cancer (95% CI 3.1 to 7.4). However, this initial strong increase was followed by cessation rates equal to rates in non-diseased participants in subsequent years.

**Conclusion:** The results underline the key role of perceived detrimental effects of smoking for smoking cessation. More rigorous disclosure of early detrimental effects of smoking along with physicians' advice to quit might be a promising approach to enhance chances of smoking cessation even before the occurrence of severe smoking related diseases.

## 208 DRINKING BEHAVIOURS AMONG HIGH SCHOOL STUDENTS FROM TIMISOARA

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**Introduction:** The European region has the highest alcohol consumption in the world, and alcohol use by adolescents has been described as reaching epidemic proportions. The aim of this study is to examine high school students' behaviour related to alcohol use.

**Methods:** We conducted a cross sectional study using a stratified cluster sample design to produce a representative sample of students for the city of Timisoara, Romania. The sample consisted of 49 randomly selected classes, stratified proportionally according to grades 9–12 and high school profile (theoretical, industrial, vocational, and professional). All students in the 49 selected classes were eligible to participate in the study. The students completed a self administered questionnaire in their

classroom during a class period. Anonymity was assured. The study was carried out between May–June 2003. Statistical analyses were performed using Epi Info 2002 and SPSS 10 software. A weighting factor was applied to each student record to adjust for non-response and for the varying probabilities of selection.

**Results:** The overall response rate was 81.2%. A total of 1056 students (54.2% females and 45.8% males) were included in the survey. More than one half of high school students (58.9%) reported drinking alcohol in the previous 30 days and 26.2% reported binge drinking, defined as having five or more drinks on at least one occasion in the 30 days preceding the survey. One drink means 15 ml distilled spirits or 250 ml beer/wine or 150 ml sparkling wine. A high proportion of students (35.0%) reported that in the previous 12 months they travelled in a car with a driver who had been drinking alcohol. During the past 30 days, 7.1% of the students had been drinking alcohol on school property. Initiation of drinking (other than a few sips) began before high school in 57.4% of female students and 85.4% of male students ( $p<0.001$ ). The main reasons for drinking are: alcohol is part and parcel of festivities and official occasions (31.8%), and curiosity (29.3%). Because 57.6% of the students declared they have been drunk at least once, logistic regression was used to detect associated risk factors. The final model included: being a male (odds ratio (OR) 2.57; 95% confidence interval (CI) 1.88 to 3.51), being a current smoker (OR 1.48; 95% CI 1.37 to 1.60), using any form of drug at least once (OR 3.62; 95% CI 1.26 to 10.45), and being a binge drinker (OR 2.87; 95% CI 2.04 to 4.05). Nagelkerke's R<sup>2</sup> value, an estimate of variations in outcome variables explained by a logistic regression model, was calculated. Its value is 0.43, indicating that 43% of the variance in getting drunk was explained by the logistic regression model.

**Conclusions:** The risk factors suggested by this study may be used to set preventive measures for drinking patterns among adolescent specified populations.

## 209 THE ASSOCIATION BETWEEN FISH CONSUMPTION AND THE OCCURRENCE OF COLORECTAL ADENOMAS IS MODIFIED BY GENETIC POLYMORPHISMS IN PPAR $\alpha$ , COX-2 AND CPLA2 GENES

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**Introduction:** Epidemiological and experimental studies have shown that fish consumption may decrease risk of colorectal cancer. Colorectal adenomas are presumed to be the pre-cancerous state of colon cancer. Studying the association between fish consumption and adenomas may give information about the risk factors in the early stages of carcinogenesis. Differences may exist between individuals as far as the association between fish consumption and colorectal adenomas is concerned. Genetic variants (polymorphisms) in genes involved in the arachidonic acid (AA) pathway may be a cause of these individual-based differences.

**Methods:** The association between fish consumption and colorectal adenomas was investigated in a case–control study (Dutch Polyp Study: 768 cases and 709 endoscopy controls). Initial analysis of fish consumption in this population indicated no association with colorectal adenomas. Genes involved in lipid metabolism, and particularly the AA pathway, were considered to modify this association. Therefore, 21 polymorphisms (SNPs) in seven of these genes were studied, among 384 cases and 403 controls.

**Results:** An interaction was observed between fish consumption and SNP c.-789C→T in PPAR $\delta$  ( $p=0.01$ ). For persons with the CT or TT genotype, the odds ratio (OR) increased from 0.35 (95% confidence interval (CI), 0.12 to 1.05) in the first fish consumption tertile to 2.22 (95% CI, 0.78 to 6.36) in the third tertile, compared with those with the CC genotype and a low fish consumption, with a suggestive trend towards an increased risk with higher fish consumption ( $p=0.02$ ). For persons with the homozygote major C allele, however, the association was inverse, with an OR of 0.65 (95% CI, 0.42 to 1.02) in the highest tertile of fish consumption. An inverse association was also seen with SNP V102V in COX-2, showing an OR of 0.42 (95% CI, 0.20 to 0.90) in the highest tertile for persons with the GC or CC genotype in this SNP compared with the GG genotype with low fish consumption. An interaction was observed between fish consumption and SNP c.2242T→C in COX-2 ( $p=0.01$ ). The OR in the highest tertile of fish consumption for those with the homozygote major T allele in this SNP was 0.52 (95% CI, 0.27 to 1.01) compared with the lowest tertile.

**Conclusion:** These observations indicate that the association between fish consumption and colorectal adenomas may depend on the occurrence of SNPs in genes involved in the AA pathway.

## 210 CARDIOVASCULAR RISK PROFILES IN A COHORT OF NEW DIAGNOSIS OF TYPE 2 DIABETES. STUDY OF THE CASTILLA Y LEÓN SENTINEL NETWORK

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**Introduction:** Diabetes type 2 is one of the main health problems in industrialised countries. As a risk factor for cardiovascular diseases, a risk profile of patients at diagnosis is essential in secondary prevention, therapy, and prognosis. The objective of this communication is to describe this cardiovascular risk profile in a cohort of new diagnosis of diabetes type 2 in Castilla y León (Spain).

**Methods:** Since 2000, 164 general practitioners of the Castilla y León Sentinel Network (CyLSN) have been recording the new diagnosis of diabetes (regardless of the type) in a population under surveillance of approximately 115 000 people/year. A standard questionnaire and a common protocol have been used for diagnosis and variables definition. Diabetes coded type 1 and diabetes diagnosed in children under 15 years have been excluded for this study.

**Results:** In 4 years, since 2000 to 2003, 781 cases of diabetes type 2 have been notified to the CyLSN; 420 males (53.9%) and 359 females (46.1%) aged 15 years and over. In two cases, sex was not recorded. Among males, more than half of cases (52.8%) were diagnosed before the age of 65 years. In females, this percentage decreased significantly to 42.6%. More than 50% are casual diagnosis and only 2.6% were discovered by complications of the disease. Almost 15% of diabetics had some kind of ischaemic disease at the moment of diagnosis, 7.3% ischaemic cardiopathy, 2.9% stroke, and 6.3% arteriopathy. Family history of cardiovascular disease was reported in 35.5% of patients, smoking habit in 19.8% (33.3% in males and 4.2% in females), obesity in 50.8% (42.8% in males and 60.4% in females), and sedentary lifestyle in 54.9% (47.4% in males and 64.1% in females). Treatment for hypertension was informed in 38.4% (28.3% in males and 50.1% in females) and for hypercholesterolaemia in 21.4% (21.2% in males and 21.7% in females). Only 11% of diagnosis had not any cardiovascular risk factor, and 40% had three or more.

**Conclusions:** Diabetes type 2 is diagnosed when other cardiovascular risk factors are already present in the patients. Obesity, sedentary lifestyle, and hypertension have a great prevalence in these patients, mainly in women, whose diagnosis was later than men. Because diabetes is one of the major cardiovascular risk factors, the treatment and control of this disease must take into account the global cardiovascular risk. More specific and accurate estimates should be performed in order to calculate the risk for cardiovascular events on the basis of age, sex, smoking status, and levels of arterial pressure and total cholesterol.

## 211 OCCUPATIONAL BRUCELLOSIS OUTBREAK AMONG MEAT PACKING PLANT WORKERS IN MADRID, SPAIN

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**Introduction:** An occupational brucellosis outbreak was detected in March 2002 in the region of Madrid, Spain, among meat packing plant workers. The aim of this study was to describe this outbreak and to identify risk factors, potential sources of infection, and the mode of transmission involved in it.

**Methods:** This was a descriptive study. A retrospective review of medical records (6 months before the first case) was carried out, as well as active case finding. Sociodemographic, clinical, microbiological, and epidemiological data, both occupational (type of work, use of barrier protective measures) and non-occupational risk factors (consumption of unpasteurised milk, milk products and raw meat, and contact with animals) of the cases were collected. Serological samples were taken from all exposed workers in order to ascertain their serological status to *Brucella*. The work organisation in the meat packing plant was also investigated. The origin of the animals handled during the last 6 months was traced. Cases were classified according to the National Surveillance System case definitions.

**Results:** A total of three cases were identified: the index case occurred on March and the last one on May 2002. Attack rate was 13% (3/23). All of them had been working at the meat packing plant during the whole

incubation period, handling carcasses from cattle and sheep (cutting and boning). These tasks imply direct contact with animal viscera. Several meat batches came from the Brucellosis Eradication Programme. Non-compliance with protective measures, such as hand washing and use of barrier protective means (gloves, safety glasses) and a high frequency of wounds in hands caused by the use of cutting tools were observed. No other occupational or non-occupational infection sources could be found.

**Conclusions:** Direct contact with freshly killed animal products infected with *Brucella* was the most likely mode of transmission involved in this outbreak. Wounds in hands and non-compliance with preventive measures were likely to have facilitated the transmission. The results of this study emphasise the importance of contact infections as a mode of transmission of brucellosis among meat packing plant workers. Health education activities in order to ensure the use of barrier protective measures, especially when handling infected animals or their products, should be strengthened.

## 212 TRENDS IN HEPATITIS A OUTBREAKS IN THE REGION OF MADRID, SPAIN, FROM 1998 TO 2003

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**Introduction:** The region of Madrid shows a low incidence of hepatitis A disease. On the other hand, seroprevalence data indicate that most people younger than 40 years old are susceptible to the infection. The aim of this study was to describe the trend in hepatitis A outbreaks in our region from 1998 to 2003 and the main risk factors involved in its appearance.

**Methods:** This was a descriptive study of hepatitis A outbreaks notified to the Region of Madrid Surveillance System for 1998 to 2003. The Region of Madrid Surveillance System case definition was adopted. We collected the following variables: age, race/ethnicity, hospital admissions, month and year of notification, diagnosis, setting of appearance, and control measures adopted.

**Results:** During the whole period, 34 hepatitis A outbreaks and 154 cases were notified. The higher number of outbreaks (13) and cases (47) took place in 2003. The mean of outbreaks per year from 1998 to 2002 was 5.6 and the mean of cases 25.3. People younger than 15 years showed the highest number of cases (44.8%), followed by the 30–40 years (26.0), 15–30 years (14.9) and >40 years (4.5%) group. Of the outbreaks, 82.4% were serologically confirmed, 16.9% of cases were admitted to hospital, and no deaths were reported. Nine outbreaks appeared in children of immigrant parents from North Africa after visiting their countries of origin, eight in household settings, seven in groups living under poor sanitary conditions, seven in schools and nurseries, and three in homosexual men. Therefore, 41.7% cases were observed in socially disadvantaged groups. Seasonal peaks were only observed in outbreaks affecting children of immigrant parents from North Africa (post-summer peaks). Proper control measures were adopted in 73.5% outbreaks.

**Conclusions:** We observed an increase in the number of hepatitis A outbreaks in 2003, mainly related to two high risk population groups: children of immigrant parents from North Africa after visiting their countries of origin, and socially disadvantaged groups living under poor sanitary conditions. It is necessary to implement public health initiatives targeted at these risk groups to encourage these populations to be vaccinated against hepatitis A and to improve sanitary conditions, both to protect these individuals and to reduce hepatitis A transmission in the general community.

## 213 SMOKING PATTERNS AMONG HIGH SCHOOL STUDENTS FROM TIMISOARA

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**Introduction:** Smoking is a well established behaviour among young people, and the available data show almost no sign of a decrease. The aim of this study was to examine high school students' behaviour related to smoking.

**Methods:** We conducted a cross sectional study using a stratified cluster sample design to produce a representative sample of students for the city of Timisoara, Romania. The sample consisted of 49 randomly selected classes, stratified proportionally according to grades 9–12 and high school profile (theoretical, industrial, vocational, and professional).

All students in the 49 selected classes were eligible to participate in the study. The students completed a self-administered questionnaire in their classroom during a class period. Anonymity was assured. The study was carried out between May–June 2003. Statistical analyses were performed using Epi Info 2002 and SPSS 10 software. A weighting factor was applied to each student record to adjust for non-response and for the varying probabilities of selection.

**Results:** The overall response rate was 81.2%. A total of 1056 students (54.2% females and 45.8% males) were included in the survey. We found out that 74.8% of the female students and 79.9% of the male students had tried cigarette smoking. Many students (38.8%) smoked a whole cigarette before reaching high school. More than one third of high school students (40.1%) reported current smoking (defined as having smoked cigarettes on one or more days of the 30 days preceding the survey) and 23.9% reported frequent smoking (defined as having smoked cigarettes on 20 or more days of the 30 days preceding the survey). Daily smoking rate was 20.7%. During the past 30 days, 26.6% of the students smoked on school property. The main reasons for smoking are curiosity (46.6%) and stress reduction (12.6%). Because of the high prevalence of current smoking, logistic regression was used to detect associated risk factors. The final model included: having cigarette smokers as friends (odds ratio (OR) 1.46; 95% confidence interval (CI) 1.04 to 2.04), getting drunk (OR 1.53; 95% CI 1.36 to 1.73), and smoking a whole cigarette at an early age (OR 1.76; 95% CI 1.60 to 1.94). Nagelkerke's  $R^2$  value, an estimate of variations in outcome variables explained by a logistic regression model, was calculated. Its value is 0.38, indicating that 38% of the variance in current smoking was explained by the logistic regression model. Only 8.8% of the students were asked to show proof of age when they bought cigarettes in a store in the previous 30 days. Giving up smoking had been tried by 65.5% of the smokers.

**Conclusions:** The risk factors suggested by this study may be used to set preventive measures for smoking patterns among adolescent specified populations.

#### 214 RISK OF GASTRIC CANCER IN RELATION TO TOBACCO SMOKING, TYPE OF ALCOHOLIC BEVERAGE AND COFFEE CONSUMPTION IN VALENCIA, SPAIN: A CASE–CONTROL STUDY

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**Introduction:** A positive association between smoking or alcohol consumption and the risk of gastric cancer has been observed in some studies, whereas no such association was found in others. With respect to coffee consumption and the risk of gastric cancer, the existing evidence is very limited. Thus, we examined the effects of alcohol intake, and tobacco and coffee consumption, on the risk of gastric cancer in a case–control study.

**Methods:** We conducted a hospital based case–control study between January 1995 and December 1998 in nine hospitals of Valencia and Alicante, Spain. A total of 407 cases, 30–80 years old, with a first histologically confirmed diagnosis of incident gastric cancer were included in this study. A total of 454 controls frequency-matched to cases by age (<60; 60–70; 70–80 years), sex, and province were selected from the same hospitals and during the same period as cases. Patients with diseases related to alcohol or tobacco were not accepted as controls. Information on demographic characteristics and risk factors was elicited by trained interviewers using structured questionnaires. Intake of beer, wine, and other alcoholic beverages was collected by food frequency questionnaires. Participants were asked how often, on average, they consumed that specific drink over a whole year, 5 years previously to the interview. There were nine possible responses, ranging from never or less than once per month up to six or more times per day. Intake of alcoholic beverages was later transformed into grams of pure ethanol. Adjusted odds ratios (OR) were estimated by unconditional logistic regression including terms for province, age, sex, education, smoking, alcohol, and coffee.

**Results:** The risk of gastric cancer rose with increasing levels of alcohol intake. In multivariate analysis, the ORs and 95% CI for light (<36 g/day), moderate (36–72 g/day), and heavy drinkers (72 g/day) compared with non-drinker subjects were 1.22 (95% confidence interval (CI) 0.87 to 1.73), 1.52 (0.89 to 1.72) and 1.93 (1.03 to 3.61), respectively ( $p$  for trend=0.02). The risk of gastric cancer was significantly elevated among current cigarette smokers but not among former smokers or pipe/cigar smokers. Compared with the group who never smoked, the adjusted ORs and 95% CI of gastric cancer for cigarette smokers of <24 cigarettes/day and = 25 cigarettes/day were

1.80 (1.15 to 2.82) and 1.94 (1.08 to 3.47), respectively. No association was found for drinking regular coffee.

**Conclusion:** Our data indicate that heavy alcohol drinking and cigarette smoking are both associated with an increased risk of gastric cancer. Our data also suggest that coffee consumption is not associated with an increased risk of gastric cancer.

#### 215 BEER AND OBESITY: A CROSS SECTIONAL STUDY

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**Introduction:** Because moderate alcohol intake is believed to increase the positive energy balance and because beer contains more carbohydrates per unit of ethanol than most wines or spirits, beer has been suspected of increasing the risk of obesity to a larger extent than other alcoholic beverages. There is a common notion that beer drinkers are, on average, more "obese" than either non-drinkers or drinkers of wine or spirits. We analysed data from a Nutritional Survey in an adult Mediterranean population, and examined the association between beer intake and obesity.

**Methods:** Data for this study were derived from a representative sample of 819 men and 964 women, aged 15 y and older, participating in a Health and Nutrition Survey conducted in 1994 in Valencia, Spain. Information was collected during home interviews. The outcome measure was obesity, defined as a body mass index of 30 kg/m<sup>2</sup>. Intake of beer, wine, and other alcoholic beverages was collected by food frequency questionnaires. Participants were asked how often, on average, they consumed a specific drink over the previous year. There were nine possible responses, ranging from never or less than once per month up to six or more times per day. Intake of alcoholic beverages was later transformed into grams of pure ethanol. Other covariates were sex, age, educational level, tobacco smoking, physical activity habits, sleeping duration, and self reported hours of TV viewing. Adjusted prevalence odds ratios (POR) were estimated by multiple logistic regression analysis to assess the effects of covariates on the prevalence of obesity.

**Results:** The mean daily beer intake was 60.9, 70.4, and 74.5 ml/day for <25, 25–29 and 30 kg/m<sup>2</sup> respectively. In multivariate analysis, after adjusting for age, gender, educational level, smoking, physical activity, sleeping duration, TV viewing, wine and spirits consumption, and energy intake, beer intake was statistically associated with increased obesity (likelihood ratio test,  $p=0.024$ ). The multivariate POR and 95% confidence interval (CI) for obesity according to regular beer intake categories (<1 beer/week, 1–6 beers/week, 1 and  $\geq 2$  beers per day) were 1.00, 1.02 (0.71 to 1.48), 1.33 (0.72 to 2.45) and 2.16 (1.05 to 4.43);  $p$ -trend=0.002. Intakes of wine or spirits were not associated with an increase of obesity in this study.

**Conclusion:** Our data indicate that intake of two or more beers per day, but not intake of wine or spirits, is associated with a higher prevalence of obesity among adults of this Mediterranean population.

#### 216 HEALTH EFFECTS OF OCCUPATIONAL EXPOSURE TO FLUORINE AND ITS COMPOUNDS

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**Objectives:** A 7 year study was carried out to evaluate the health status of workers occupationally exposed to fluorine and its compounds in an enamel enterprise.

**Method:** Air monitoring in the workplace concerning fluorine and its compounds was carried out during a 7 year period, and 138 exposed and 138 non-exposed workers were examined (mean (SD) age 45.9 (5.3) years; mean exposure time 18.1 (3.1) years). The applied tests comprised an epidemiological questionnaire for the fluorine effects, as well as investigation of the health status of the workers, bronchitis record, clinical and functional ventilation examinations, urinary fluorine, laboratory blood examinations, and individual record checking up. Linear regression analyses were performed to find out the relationship between the exposure and health effects.

**Results:** The values of fluorine in the air of the workplaces ranged from 0.1 to 3.8 mg/ $\mu$ g air (MAC = 2 mg/ $\mu$ g air) during the study period, and 41.9% of exposed workers presented rhinitis, laryngotracheitis, and bronchitis. The incidence of chronic bronchitis was not significantly ( $p>0.05$ ) higher in smokers compared with non-smokers, but the

incidence of chronic bronchitis was significantly ( $p < 0.05$ ) higher in exposed workers compared with the non-exposed ones. No signs of anaemia were observed. The values of urinary fluorine were higher in the exposed versus the control group, without exceeding the threshold limits. Linear regression analyses have shown positive correlations between fluorine exposure and incidence of chronic bronchitis ( $r = 0.78$ ), and between fluorine exposure and incidence of chronic respiratory diseases ( $r = 0.72$ ).

**Conclusions:** Fluorine exposure may be responsible for the high incidence of chronic irritative respiratory diseases, especially of chronic bronchitis in exposed workers. In the studied geographical area fluorine was scarce, and this fact explains the relatively low level of fluorine in the exposed workers' urine. For the prevention of chronic respiratory diseases, it is advised to reduce the level of fluorine and its compounds level in the air of all workplaces, to change the receipt of enamel, and to improve the ventilation system of the working sites.

### 217 THE BURDEN OF SOCIAL PHOBIA IN A BRAZILIAN COMMUNITY AND ITS RELATIONSHIP WITH SOCIOECONOMIC CIRCUMSTANCES: THE BAMBUI STUDY

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**Objective:** Social phobia in environment of poverty and major social inequalities, as observed in most developing countries, has received little attention. This population-based study was carried out in a poor community in Brazil (15 000 inhabitants), aiming at determining the prevalence of social phobia and its associated factors.

**Methods:** The Composite International Diagnostic Interview was applied to a random sample of 1037 residents aged  $> 18$  years.

**Results:** The 1 month, 1 year, and lifetime prevalence of social phobia were 7.9, 9.1 and 11.8%, respectively. One month social phobia was independently associated with age (45–64 years), marital status (divorced/separated), worse socioeconomic indicators (family income and education), number of months worked, worse health status, and use of health services and medications.

**Conclusion:** There was an important burden of social phobia in the study community due to its high prevalence (similar or superior to those observed in most developed countries) and its association with worse health status and use of health services and medications. The strong association between social phobia and socioeconomic circumstance, even in a small and poor community, is a reflection of the major social inequalities in Brazil.

### 218 THE EPIDEMIOLOGY OF A POST-FLOODS LEPTOSPIROSIS IN THE CZECH REPUBLIC

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**Introduction:** Leptospirosis is a typical zoonosis with natural nidality, and its occurrence in the climatic conditions of the Czech Republic is sporadic, with a normal incidence of about 0.3 cases per 100 000 inhabitants. In 1997 and 2002, however, the incidence of leptospirosis has been influenced by natural phenomena, catastrophic floods, which increased the numbers of serologically diagnosed and registered cases three times, i.e. to 0.9/100 000 in comparison with previous years. In 1997 a total of 7156 subjects in the Czech Republic were examined for a leptospirosis, and the disease was diagnosed and registered in 94 of them (and in 2002 in 92 patients respectively). Two thirds of these cases came from inundated areas, half of them in direct relation to the floods. Four of the registered cases (1997) of Weil's disease have died in the Czech Republic (including two rescue crewmen).

**Methods, Results and Conclusions:** The difference between the actual and reported morbidity is critically discussed. The poster contains graphs, maps, and tables, which described the aforementioned results.

### 219 INFLUENCE OF STROKE TYPE AND SOME RISK FACTORS ON REHABILITATION OF HEMIPLEGIC PATIENTS

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**Introduction:** The objective of this study was to determine rehabilitation efficacy, depending on the type of survived stroke and the presence of some risk factors.

**Methods:** The trial included 100 hemiplegic patients with stroke admitted to the Institute for Medical Rehabilitation in Skopje. Data were provided from the disease histories of the patients, questionnaires, Barthel test index and Ranke scale.

**Results:** The reason for stroke was ischaemia in 52% of the respondents, while 28% of them had haemorrhage. Arterial hypertension dominated in 79%, followed by heart diseases in 44%, and diabetes with 25% of the respondents. Rehabilitation treatment gave better results in haemorrhagic insults when average Barthel indices were used (hemorrhagic 73.10, ischaemic 68.85 on the second control). Ranke scale favoured neither of the two stroke types from the rehabilitation point of view (hemorrhagic 2.34, ischaemic 2.53 on the second control). Poor outcome from rehabilitation was found in patients with simultaneous presence of all three risk factors (Barthel 60.3). The greatest Barthel of 88.3 was found in the diabetic respondents. More serious degree of handicap was found in respondents with simultaneous presence of all three risk factors (Ranke 3.2).

**Conclusions:** Reparation of motor functions is more successful in respondents with hemorrhagic insult. High blood pressure, heart disease, and diabetes as risk factors for stroke make difficult the patient rehabilitation.