

## 224. Smoking-related diseases and smoking cessation

### P1791

#### Anxiety and depression measured by HADS questionnaire are related to failure in 4 week smoking cessation program

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Anxiety and depression are common among smokers and are perceived barriers to smoking cessation. Our goal in this study was to evaluate if anxiety and depression measured by the Hospital Anxiety and Depression Scale (HADS) was greater in patients who failed to quit in our 4 week hospital based smoking cessation program.

All patients enrolled in our program since 2009 were invited to answer the 14 question HADS. Patients were divided in 2 groups, those who quit smoking (Q) and those that continued to smoke (NQ) after the end of the 4 week program. All patients were treated with behavioral therapy, nicotine replacement and/or bupropion. A score of 8 to 10 in each HADS category is considered borderline and a score of more than 10 is regarded as significant anxiety or depression. From 447 patients screened, 197 patients answered the questionnaire. Fagerström Test for Nicotine Dependence scored  $6.2 \pm 2.0$ . Mean age was  $49 \pm 10$  years, 79 were males and 118 females. 62% had borderline or significant anxiety and 34% scored 8 or more in depression questions. Both Q (N=58) and NQ (N=139) groups were similar regarding age, sex and Fagerström score. Those in group Q scored a median of 4 in depression score while group NQ scored 6 ( $p < 0.001$ ). Median anxiety scores were 10 in NQ group and 8 in Q group ( $p = 0.009$ ). We found a statistical significant difference in anxiety and depression scores between those who succeeded and those who failed in quitting at the end of our 4 week program. Anxiety and depression were more accurate in predicting failure than the nicotine dependence score. This reinforces the need for screening psychiatric conditions during a smoking cessation program.

### P1792

#### Cost-effectiveness of a lung health intervention in US smokers

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A study (Step2quit, Parkes et al. BMJ 2008) of current smokers randomized to assessment and communication of "lung age" vs no assessment found 13.6% of intervention vs 6.4% of controls smoke-free at 1 year. Our objective was to expand on Step2quit using a model to estimate the impact of a lung health intervention (LHI) consisting of spirometry and lung age assessment on lifetime effects of COPD diagnosis, progression, costs, and cost per quality-adjusted life-year (QALY) gained vs usual care (UC). The model was estimated from US population surveys and published studies. Target population was US smokers aged  $\geq 35$  years, stratified by COPD severity (GOLD stage) and diagnosis receiving LHI vs UC at a routine office visit. Post-visit COPD diagnosis and smoking cessation differ by receipt of LHI. Depending on GOLD stage, diagnosed patients may receive SABA, anticholinergics (AC), LABA+ICS, or AC+SABA. Costs and outcomes were modeled with Markov health states defined by smoking status, GOLD Stage and diagnosis. Transition to more severe GOLD stage depends on treatment received and smoking status. Lifetime costs (in \$2009) and outcomes were discounted at 3%/year. Results show that LHI leads to more lifetime diagnosis (72% LHI vs 51% UC) and less progression to severe/very severe COPD (10.1% LHI vs 12.4% UC). Lifetime per-person COPD costs are \$52,789 for LHI vs \$51,182 for UC, with higher LHI costs of intervention (\$57) and treatment (\$3,731) partially offset by lower COPD management costs (-\$2,181). LHI provides additional QALYS at \$10,064/QALY gained. Using conventional willingness-to-pay threshold values, LHI is a cost-effective intervention in COPD.

### P1793

**Outcome of nicotine replacement therapy in patients admitted to intensive care unit: A randomized case-control double blinded prospective pilot study**  
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**Introduction:** The effects of nicotine withdrawal in smokers admitted to ICUs are not well understood and therefore the role of Nicotine Replacement Therapy (NRT) in patients admitted to ICUs is controversial.

**Aims:** To prove that NRT in ICU patients decreases the use of sedatives and analgesics, the number of days on ventilator, and the total ICU stay.

**Methods:** The study was performed in the 20 bed ICU. Forty patients meeting inclusion and exclusion criteria were randomized into either an interventional or control group. Patients in the interventional group received a 21mg nicotine patch every day until the patient was discharged from the ICU, transferred to the general medical floor, or until 10 weeks. Patients in the control arm received fake patch. The use of sedatives and analgesics during ICU stay, and use and duration of invasive mechanical ventilator were noted. The length of ICU stay was also compared in both the groups.

**Results:** Twenty-seven patients were male, 13 were female. The mean age of the interventional group patients was 57.4 years and 52.5 years in the control group. The mean APACHE II score was 14.3 in the interventional group vs. 13.8 in the control group. The mean length of ICU stay in the interventional group was 4.5 days while in the control group mean length of ICU stay was 7 days. The mean number of days on ventilator in interventional group was 1.9 days vs. 3.5 days in the control group. The number of days on sedation and analgesia was also less in the interventional group compared to the control group.

**Conclusion:** The length of ICU stay and the number of days on ventilator decreases in the patients receiving NRT.

### P1794

#### Do targeted smoking cessation ward rounds increase referrals to smoking cessation services? A survey in a UK district general hospital

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**Background:** NICE (UK) recommends that all smokers should be advised to quit and that individuals who want to stop smoking should be referred to an intensive smoking cessation service (SCS). In a previous study at our institution, 74% of patients had a missed opportunity for referral to the SCS during a hospital admission. A major factor was the lack of knowledge about the service by health care professionals and patients. Subsequently, a "targeted smoking cessation ward round" was introduced at the hospital. This study compares the current utilization of the SCS to that in 2008.

**Method:** A voluntary questionnaire surveying the utilization of the SCS was completed by 187 patients (58% smokers past or present of which 69% were current smokers).

**Results:** 38% (23% in 2008) of current smokers indicated that they would like a referral to the service and were subsequently offered related reading material and an appointment. The table below summarises the results.

Table 1. Referrals to SCS

	2008	2010
Total number questioned	136	187
Offered referral (%)	44	69
Accepted referral (%)	33	34
Accepted and utilized service (%)	5	21
Referral made by secondary care (%)	49	68
Referral made by primary care (%)	70	49
Missed referral opportunity (%)	74	62

**Conclusions:** Referral to SCS has improved significantly between the two surveys. The introduction of daily targeted smoking cessation ward rounds and the promotion of the SCS has resulted in improved uptake of the SCS. However, further education of health care professionals in primary and secondary care is needed with regards to the importance of smoking cessation and the need to refer to a specialist smoking cessation service.

### P1795

#### High and low intensity interventions for smoking cessation during pregnancy, an RCT

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**Introduction:** The highest smoking rates in the world among female smokers are recorded in Greece, where 39% of women smoke (WHO 2009); in this context some women continue smoking during pregnancy.

**Aims and objectives:** The aim of this RCT is to test whether offering pregnant smokers a high intensity intervention for smoking cessation increases the rate of smoking cessation, in comparison to a usual care low intensity intervention.

**Methods:** The high intensity intervention (n=24) included: 30 minutes of cognitive-

behavioural intervention and a self-help manual. The control group (n=30) received 5 minutes of low intensity intervention. Smoking cessation was biochemically validated by urine cotinine samples both at the baseline and around the 32nd week of gestation among both groups (ClinicalTrials.gov Identifier: NCT01210118).

**Results:** The preliminary results indicate a significantly higher percentage of pregnant smokers quit smoking in the experimental group (20.8%) than in the control group (6.7%). Urine cotinine levels ranges were similar in both groups before the intervention. A significant decrease in urine cotinine concentrations after the intervention, were noted among both groups with the participants of the experimental group found to have a larger decrease in cotinine concentrations (control by 326±63 ng/ml vs. experimental group 402,± 119 ng/ml).

**Conclusions:** These preliminary results indicate that a high intensity intervention was found more effective than a low intensity intervention for smoking cessation during pregnancy, indicating its possible usefulness within clinical practice.

**P1796**

**Predicted impact of access to varenicline on abstinence simulating multiple quit attempts over smokers' lifetimes**

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**Background:** Relapse to smoking is a common challenge to many quitters, thus, access to effective smoking cessation treatment (SCT) for multiple quit attempts may be important in achieving permanent abstinence.

**Objective:** To evaluate the impact of access (V<sup>+</sup>) vs. no-access to varenicline (V<sup>-</sup>) on predicted health benefits and costs over smokers' lifetimes.

**Methods:** A discrete event simulation of SCT allowing multiple quit attempts (QA) with choice of treatments predicting response and possible relapse, as well as estimates of lifetime health and economic outcomes in a U.S. population was developed. The simulations compare outcomes of smokers who had access to varenicline for all QA's with those without any access to varenicline. Smokers could also use NRT, bupropion, behavioral modification, or "cold turkey" for any QA, regardless of access to varenicline.

**Results:** The average predicted total abstinence time (tAT) is 113 months with V<sup>-</sup> and 126 months with V<sup>+</sup>. The corresponding average lifetime QAs/smoker are 9.0 with V<sup>-</sup> and 7.5 with V<sup>+</sup> conditions. The percent of individuals achieving permanent abstinence (at least 2 years by the time of death) is 68% with V<sup>-</sup> and 72% with V<sup>+</sup>. For each simulated comorbidity (COPD, lung cancer, coronary heart disease and stroke), the incidence of new cases is lower with V<sup>+</sup>. Access to varenicline is dominant, i.e. more effective and less costly than no-access across all comparisons.

**Conclusion:** Providing access to varenicline over smokers' lifetimes results in better health outcomes at lower costs.

**P1797**

**Smoking and treatments among asthma patients in South Korea**

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**Background:** The prevalence of smoking in South Korea is high, an estimated 23.3% for adults, 63% never smoked (NS), 16% were former smokers (FS) and 21% were current smokers (CS). The proportion of patients with ≥1 exacerbation in the prior year was 42% for NS, 38% for FS and 40% for CS (chi-squared p=0.52). Most patients were using ICS+LABA (73%) with no differences in use between smoking categories (72% of NS, 75% of FS and 76% of CS; p=0.40). Use of leukotriene modifiers (52%) was also common, with no differences in use between smoking categories (52%, 54% and 49% for NS, FS and CS, respectively; p=0.56). Twelve percent of patients were reported as using an ICS and there were slight differences in use between smoking categories (14%, 10% and 6% for NS, FS and CS, respectively; p=0.001).

**Conclusion:** The prevalence of smoking among this asthma patient population was similar to previously reported national rates in South Korea. Smoking status does not appear to affect the use of two common asthma medications; however, smoking status may influence the use of ICS.

**P1798**

**Temporal effects of cigarette smoke associated to diesel exhaust particles in mice**

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Cigarette smoke (CS) is the major cause of chronic obstructive pulmonary disease (COPD), since 80% of COPD cases are associated to long term smoking. Diesel exhaust particles (DEP) are a major source of traffic-related air pollution and it is a risk factor to the development of this disease. The aim of this study was to evaluate the time course of the effects of CS associated to DEP exposure on the development of emphysema at 1, 3 and 6 months. Mice were divided into 5 groups: control (C); vehicle (V) NaCl 0.9%; DEP -nasal instillation of 30µg DEP in 10µl NaCl 0.9%/day, 5days/wk; CS - exposed to CS for 30min/day, 5days/wk; and group DEP+CS. We evaluated inflammatory cells in bronchoalveolar lavage (BAL) and mean linear intercept (Lm). We observed an increase in Lm values after 6 mo. in groups CS, DEP and DEP+CS (p≤0.001). Temporal analysis of cell profile in BAL showed an increase in total cells in 3 mo. after CS exposure (p≤0.001), while at 6 mo. we observed a decrease in DEP+CS group compared to C, CS and DEP (p≤0.001). Same cell profile was noted in macrophages numbers (p≤0.001). Decrease in lymphocytes was observed at 3 mo. in DEP and DEP+CS compared to CS (p=0.001).

Linear intercept after 6 months of exposure

C	54.71±0.88
V	54.40±1.12
CS	65.23*±1.37
DEP	66.60*±1.54
CS + DEP	65.56*±1.34

\*p≤0,001 compared to C and V groups.

Therefore independently which exogenous particles were inhaled: CS or DEP, the pulmonary emphysema developed after 6 mo. and did not show an impairment by exposition to both. After 6 mo. we observed a synergic effect of DEP+CS leading to an attenuation of the density of inflammatory cells in BAL. Our data suggest that exposition to DEP could result in the development of COPD.

**P1799**

**Lung function of exclusives narghile smokers (ENS): Comparative study with exclusives cigarettes smokers (ECS)**

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**Introduction:** Studies of the lung function profiles of ENS are few, have some methodologic limits and present contradictory conclusions.

**Aim:** To Compare the plethysmographic profiles of an ENS group with these of two control groups: ECS and healthy non-smokers subjects (HNS).

**Population:** Inclusion criteria for ENS group: males aged 35-60 Yr; smoking >10 narghile-year (NA), no history of cigarettes smoking. **Definitions:** obstructive ventilatory defect (OVD): FEV<sub>1</sub>/FVC < LLN. Restrictive ventilatory defect (RVD): TLC < LLN. Mixed ventilatory defect: FEV<sub>1</sub>/FVC and TLC < LLN. Non specific ventilatory defect: FEV<sub>1</sub> and FVC < LLN but TLC > LLN. Lung hyperinflation: RV > ULN. Estimated lung age was calculated. Plethysmographic measures were made. Two control groups were included: ECS more than 10 paquets-years (PA) and HNS.

**Results:** Compared to the HNS group, the ENS group includes significantly higher

Groups data			
	Exclusives Narghile Smokers (ENS, n=36)	Exclusives Cigarettes Smokers (ECS, n=120)	Healthy Non-smokers (HNS, n=97)
Chronological age (Yr)	45±7	47±5	47±7
Estimated lung age (Yr)	63±23 µ	90±33 # µ	45±26 † * µ
Height (m)	1.73±0.06	1.71±0.07	1.72±0.09
Weight (kg)	88±13	74±18 #	79±12 † * µ
Body mass index (kg.m <sup>2</sup> )	29±4	25±5 #	27±3 † * µ
Smoking quantity	36±22	36±22	0
Percent of subjects having abnormal ventilatory variables (VV) or ventilatory defects			
VV ≤ lower limit of normal			
Forced Vital Capacity (FVC)	28%	54% #	6% † *
Forced Expiratory Volume in 1 s (FEV <sub>1</sub> )	47%	89% #	10% † *
FEV <sub>1</sub> /FVC	8%	61% #	3% † *
Total Lung Capacity (TLC)	36%	31%	2% † *
VV > upper lower of normal			
Thoracic Gaz Volume	36%	38%	5% † *
Residual Volume (RV)	36%	57% #	4% † *
Total Lung Capacity (TLC)	19%	10%	3% † *
Autres anomalies			
Mixed ventilatory defect	3%	12% #	0% † *
Non specific ventilatory defect	19%	14%	7% † *

# p<0.05: ENS vs. ECS. † p < 0,05: ENS vs.HNS. \* p < 0,05: ECS vs. HNS. µ p < 0,05: ANOVA. µ p < 0,05: chronological age vs. estimated lung age for the same group.

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percentages of subjects having lower expiratory flows or OVD or RVD or lung hyperinflation. Compared to the ECS group, the ENS group includes significantly lower percentages of subjects having lower expiratory flows or OVD or lung hyperinflation. Cigarettes and narghile smoking accelerate lung ageing with significantly higher estimated lung ages.

**Conclusion:** The plethysmographic profile of ENS is different from this of ECS and narghile consumption accelerates, lesser than cigarettes smoking, lung ageing.

#### P1800

##### The dynamics of free radical parameters in exhaled breath condensate (EBC) in smokers during the course of physical workload

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The aim of the study was to investigate the total nitrates/nitrites (TNN) and Fe2+ concentrations in EBC in smokers compared with nonsmokers during the course of physical exercises.

**Materials and methods:** The study group included 30 smokers 20-23 y.o. with smoking history of 3-4 years. The control group consisted of 25 healthy (without any documented medical diagnosis) non-smokers 20-23 y.o. The TNN level in EBC was determined by nitrate reductor and Griess reagent, the concentration of Fe2+ was observed by ferrozine method. All the data were determined in two points: baseline at rest and after exercise (when the heart rate was 100-120 beats per minute) in both groups.

**Results:** The results obtained demonstrate that there was significant decrease of TNN concentration in EBC in study group (the basal level of TNN in EBC was lower in 1.6 times compared with nonsmokers). During the course of physical exercises it was shown the increase of TNN level in EBC in smokers compared with nonsmokers (in 2.0 and 1.2 times respectively), also the increase of Fe2+ basal concentration in lung tissue in 2 times compared with nonsmokers ( $p < 0.05$ ) was determined. During the exercise the Fe2+ concentration in smokers was higher in 1.4 times as compared with nonsmokers ( $p < 0.05$ ).

**Conclusion:** The physical workload provide a significantly changes in free radical metabolism in smokers

#### P1801

##### Time trends of smoking habits in Italy during the last decade

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**Objective:** To estimate time trends of smoking habits in Italy as a function of gender and occupation.

**Methods:** In the frame of the GEIRD study (Gene Environment Interactions in Respiratory Diseases) 10494 subjects, randomly selected from the general population aged 20-44 years in 7 Italian centres (Torino, Pavia, Verona, Sassari, Ancona, Terni, Salerno), answered a screening questionnaire between 2007 and 2010 (response percentage=57.2%). In 4 centres smoking prevalence was compared with prevalence recorded between 1998-2000 by the Italian Study of Asthma in Young Adults (ISAYA).

**Results:** In the GEIRD study the prevalence of current smokers was higher in men (31.3%) than in women (24.2%), while the prevalence of past-smokers was similar (16.8% and 15.8% respectively). Current smoking was twice as prevalent among unemployed and blue collars (39%) as among managers and clerks (20-22%). In a multinomial model controlling for centre, sex, age, occupation, cumulative response percentage, season and type of response (postal/phone), the risk of current smoking largely declined from the first to the second survey (RRR=0.68, 95%CI 0.62-0.74). A significant, although smaller, decline was recorded also in the risk of being a past-smoker (RRR=0.85, 0.76-0.94). The declining trend did not differ by gender (time-sex interaction:  $P=0.206$ ), but it was largely affected by occupation (time-occupation interaction:  $P=0.004$ ): it was particularly pronounced in managers, while being absent in unemployed.

**Conclusion:** Smoking prevalence has declined in this Italian population in both sexes. The declining trend, however, while pronounced in the highest socio-economic classes, has not started yet among the lowest classes.

#### P1802

##### Smoking among adolescents in northern Greece: Epidemiological data and potential preventive factors

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**Aim:** The investigation of smoking habits among adolescents (12-18 year old) and differences between smokers and non-smokers which may act as preventive factors.

**Methods:** We randomly selected 10% of the whole number of high schools in 24 prefectures of Northern Greece. All parents gave informed consent and then students completed unnamed questionnaires. We used two prototype questionnaires which were validated across the 10% of the study population (reproducibility rate: 88.1% for non-smokers and 86.5% for smokers).

**Results:** We analysed data of 18,904 questionnaires. The mean age (SD) of the students was 15.3±1.7 years (52% males). The general percentage of cigarette smoking was 14.2% (84% reported everyday smoking: 15.7±10.6 cigarettes/day). Prevalence of smoking was higher among males, high school students and residents in urban areas (table).

Smoking frequency among different subgroups

	Smokers (%)
Males*	16.4
Females	11.8
12-15 year old	5.1
16-18 year old*	24.1
Urban area (Thessaloniki)	16
Capitals of prefectures	16.3
Rural areas*	10.7

\* $p < 0.001$ .

The most common reasons for starting were: curiosity (56.6%), control of unpleasant feelings (38.7%) and friends who smoke (28%). Smokers reported starting at age 13.3±2.3 years. We found that smokers compared to non-smokers had: less educated parents ( $p < 0.001$ ), higher percentages of smoking among siblings and friends (41.4 vs 14.6%,  $p < 0.001$  and 92 vs 33%,  $p < 0.001$ ), dealing less with sports ( $p < 0.001$ ), visit more frequently internet cafes ( $p < 0.001$ ).

**Conclusions:** Prevalence of smoking among adolescents in Northern Greece was 14.2%. We found some potential preventive factors which should be supported in a well-planned antismoking campaign.

#### P1804

##### The factors with high motivation for smoking cessation

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**Introduction:** Smoking cessation is the most important intervention for COPD prevention and treatment. Having motivation to stop smoking is essential for good results of a smoking cessation program. Finally, one of the effective factors in success is having self-efficacy.

**Objectives:** To evaluate if any correlation exists between motivation degree, nicotine dependence and cessation rate. It seems that volunteers had enough motivation to quit because they tried to take this action; however, a wide variety of factors had some effects on their motivation.

**Method:** This study was done on the volunteers of smoking cessation clinic. They underwent tests for dependence and motivation degree by using FT, Q-MAT respectively. Then this motivation degree was evaluated according to different factors such as nicotine dependency, demographic factors and the quit result.

**Results:** In this study 345 volunteers were studied from which 311 (90.1%) were men. The mean age of them was 37.6. The mean of Q-mat score was 15.5. The mean of Q-mat score for high nicotine dependency was 14.8 and for low nicotine dependency was 16.5 ( $p=0.04$ ). The mean of Q-mat score for successful quit was 15.8 and in unsuccessful subjects was 15.4 ( $p=0.4$ ). The mean of FT in successful and unsuccessful subjects was 5.2, 6.08 respectively ( $p=0.03$ ).

**Conclusion:** In the volunteers with high nicotine dependency, the degree of motivation and self-efficacy was significantly low. Successful quit rate was significantly low in volunteers with high nicotine dependency. So it is suggested to provide a more effective strategy in designing motivational interviews and treatment for the smokers with high nicotine dependency in order to increase the successful quit rate.



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**P1805****Maternal smoking during pregnancy and the risk of asthma related symptoms in the early childhood**

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Maternal smoking during pregnancy and fetal growth retardation might adversely affect early lung development and increase the risks of asthma-related symptoms. The study of the associations of maternal smoking during pregnancy and fetal growth, measured in different periods of pregnancy with asthma-related symptoms in early childhood.

**Methods:** We performed a 4 years (2006-2010) prospective population-based cohort study starting in pregnancy. Fetal growth retardation was defined as a decrease of 1 gestational age adjusted standard deviation score in weight from 3rd trimester to birth. Maternal smoking during pregnancy (I, II, III trimesters) and wheezing, lower respiratory tract infections (LRTI) and diagnosed asthma until the age of 3 years were assessed by questionnaires. Adjusted logistic regression analyses were performed in 1217 subjects.

**Results:** Maternal first trimester only smoking was not associated with asthma-related symptoms in the children. Continued maternal smoking during pregnancy was associated with wheezing at 1, 2 and 3 years with adjusted odds ratios (aOR) 1.47 (94% confidence interval 1.14 to 19.4), 1.51 (1.13, 2.10) and 1.60 (1.09, 2.37), and with LRTI at 2 years (aOR 1.69 (1.19, 2.41)) but not with diagnosed asthma. Fetal growth retardation was not associated with any asthma-related symptoms. Children of continued smoking mothers with fetal growth retardation had higher risks of wheezing than children of smoking mothers without fetal growth retardation.

**Conclusions:** Continued maternal smoking during pregnancy is associated with increased risks of wheezing in early childhood. These associations are stronger in children with fetal growth retardation.

**P1806****Second hand smoke exposure among hospital staff in Budapest, Hungary: A case study**

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**Background:** Hungarian hospitals have been declared smoke free since 2005. However, compliance with this law may not be 100%.

**Purpose:** To assess the level of compliance with the smoke-free hospital law by measuring levels of indoor air pollution in different indoor areas of a large public hospital.

**Methods:** TSI SidePak AM510 Personal Aerosol Monitor was used to measure the concentration of particulate matter less than 2.5 microns in diameter (PM<sub>2.5</sub>) observed in the ambient air of 117 locations sampled, containing 16 health care and 6 non-health care departments, in a Hungarian public hospital between January and April 2009.

**Results:** We observed evidence of smoking such as cigarette butts and ashtrays in several indoor areas of the hospital. Air monitoring revealed concentrations of respirable suspended particulates ranging from 1 to 336 µg/m<sup>3</sup> depending on the area sampled. Clinical departments averaged 83 µg/m<sup>3</sup> and the non-clinical departments averaged 37 µg/m<sup>3</sup>, respectively. In the rooms where evidence of smoking was not seen the mean PM<sub>2.5</sub> level was 6 µg/m<sup>3</sup>. In areas where evidence of smoking was observed the mean PM<sub>2.5</sub> level was 138 µg/m<sup>3</sup>. The highest levels of indoor air pollution were found in the radiology (336 µg/m<sup>3</sup>), intensive care unit (230 µg/m<sup>3</sup>) and neonatology (163 µg/m<sup>3</sup>).

**Conclusions:** At least in one large public hospital it appears that compliance with the smoke-free law is incomplete resulting in high levels of indoor air pollution which pose a health risk to patients, visitors and staff. The measured levels of indoor fine particle air pollution exceeded the levels in nearly all instances that the WHO and US Environmental Protection Agency have concluded are harmful to human health.

**P1807****The influence of early exposure to tobacco smoke for pulmonary disease**

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**Background:** Smoking is a very serious problem for COPD, lung cancer and other chronic pulmonary diseases. However, there are few studies on early exposure to tobacco smoke. Smoking rate in Japan decreased to 21.8%. However it is still higher in the northern area (Hokkaido). In particularly, it is 31.0% in Erimo town

(southernmost extreme of Hokkaido), which is higher than that of any other cities in Hokkaido. The reason is that when parents smoked, the child set fire to tobacco and handed it as a custom in 1940's. Because a hand was wet while fishing, they were not able to set fire themselves.

**Aim:** We evaluated the influence of early exposure to tobacco smoke on prevalence of COPD and lung cancer.

**Methods:** Using the results of the medical checkup carried out at the Erimo town health division and the Town clinic, we analyzed about 6000 residents' epidemiologic data.

**Results:** Majority of residents were found exposed to tobacco smoke actively or passively from a young age. Housemate smoking rate was 81.0%. The mortality of chronic respiratory disease was 71.4 per 100,000 person-years that was far exceeded from the national average (11.4 per 100,000 person-years). COPD prevalence (465.5 per 100,000 person-years) was significantly higher than the national average (136.2 per 100,000 person-years). Lung cancer prevalence was also very high (877.2 per 100,000 person-years).

**Conclusion:** Early exposure to tobacco smoke in childhood significantly increases prevalence of COPD and lung cancer. In Japan, young generation showed still high smoking rates (14.3% aged 20's, 18.0% aged 30's). Smoking cessation is the most important intervention to prevent disease progression.

**P1808****Determination of cutoff points for smoking biological markers and the influence of involuntary tobacco smoke exposure**

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**Background:** The reference values used for smoking biological markers should be determined in each country or region because there are many factors that can influence them.

**Objective:** To estimate the cutoff points of exhaled carbon monoxide (ECO), carboxyhemoglobin (COHb), plasma cotinine and urinary cotinine in order to differentiate active smokers from never-smokers.

**Methods:** In a cross-sectional study with 53 active smokers (30 males) and 49 non-smokers (14 males), ECO, COHb, plasma cotinine and urinary cotinine were measured.

**Results:** Anthropometric variables in both groups showed no statistically significant differences (p-value > 0.05).

Active smokers had significantly higher levels of ECO, COHb, plasma cotinine and urinary cotinine than non-smokers (p-value < 0.05).

It was determined the following cutoff points for biological markers: ECO - 4 ppm (sensitivity 100% and specificity 96,2%); COHb - 1,6% (sensitivity 100% and specificity 96,2%); plasma cotinine - 10 ng/mL (sensitivity 100% and specificity 96,2%) and urinary cotinine - 779 ng/mL (sensitivity 100% and specificity 94,3%). In the absence of smoking exposure, the cutoff point for urinary cotinine changed to 22 ng/mL.

**Conclusion:** All the biomarkers presented an excellent ability to discriminate between smokers and non-smokers.