the late-onset asthma group (OR 1.28 [95% CI: 1.11–1.48]) or the early-onset persistent asthma group (OR 1.27 [95% CI: 1.08–1.48]) compared to the never/infrequent asthma group. Similar results were seen for boys, OR 1.16 [95% CI: 1.08–1.25], OR 1.11 [95% CI: 0.98–1.25], and OR 1.34 [95% CI: 1.20–1.51] respectively. The odds remained largely the same in imputed and unadjusted models.

Conclusion In a Danish nationwide population four asthma trajectories were identified, in agreement with clinical studies. ACE in early life was associated with all asthma phenotypes for both boys and girls.

P.2.24 THE EFFECT OF THE EXPOSURE TO WORK-RELATED POTENTIALLY TRAUMATIC EVENTS ON OCCUPATIONAL FUNCTIONING (WORK LIMITATIONS) AMONG FIREFIGHTERS: A CROSS-SECTIONAL STUDY

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Objective The purpose of this study was to investigate whether firefighters' exposure to work-related trauma events is related to work limitations that form part of social health.

Methods In 2016, 618 firefighters from four cities in Gyeong-sangnam-do participated in this study. They were analyzed using a health-related work limitations questionnaire, experience and type of work-related trauma, Korea Depression Scale, and the World Health Organization quality of life assessment instrument. The health-related work limitations consisted of three scales: 'physical work demands,' 'psychosocial work demands,' and 'environmental work demands.' The analysis was done by hierarchical logistic regression analysis.

Results Of the subjects, 70.2% remembered traumatic experiences they had experienced during their job. The total work limitations were 21.5%; the limitation of physical work demands was 16.8%, that of psychosocial work demands was 15.5%, and that of environmental work demands was 13.8%. Logistic regression analysis of the final model 3 showed that, if firefighters have experience of their own risks and personal injury, physical (95% CI=1.169–9.405), psychosocial (95% CI=1.080–8.609), and environmental (95% CI=1.659–14.402), the total (95% CI=1.439–9.678) work limitation was significantly increased. When there was a memory of a terrible body or injury, the total work limitations increased significantly (95% CI=1.092–3.905).

Conclusions When firefighters are exposed to trauma events during their jobs, these have a negative impact on their work. In order to protect and improve the occupational functions of firefighters, effective prevention and management of work-related trauma incidents should be considered.

P.2.27 MANGANESE EXPOSURE IN STEEL AND ALLIED FACTORY: CAUSE OF SECONDARY PARKINSONISM

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Case presentation A 43 year old male presented with 6 months history of gradual onset and progressive bradykinesia, tremors

of upper limbs and walking difficulty in the form of imbalance and short shuffling gait, slurring of speech with hypophonia. Neurological examination revealed slow broken saccades, rigidity with cogwheeling, bradykinesia and short shuffling, festinant gait. He had action and postural tremors of upper limbs. Pull test was positive. Thus a diagnosis of young onset Parkinsonism was considered. But, occupational history revealed that he worked in blast furnace of a steel and allied factory for past 14 years where manganese ore has been using for the strengthening of the stainless steel. He was evaluated with MRI Brain which showed symmetrical hyperintensities involving basal ganglia and subcortical white matter in T2 weighted images. T1 weighted images showed evidence of basal ganglia hyperintensities probably related to mineral deposition. Renal function, thyroid function tests including anti thyroid antibodies, KF Ring, S. Ceruloplasmin, Liver function tests, CSF, ultrasound abdomen- all were normal. Two consecutive serum manganese level tests in six months interval showed initial rise (two times) with the history of exposure and followed by normal level without the exposure. Patient was started on symptomatic medications like levodopa and trihexiphenidyl but after 8 months of medication (March- October, 2018) he had not showed any significant improvement. The written consent was taken from patient for this study.

Conclusion In view of strong occupational history of manganese exposure, the clinical features and non responsiveness of treatment with levodopa, a possibility of manganese toxicity was strongly considered for this rare case of secondary parkinsonism. Also non adherence with the legal mandate of periodical medical examination of workers exposed to toxic metals with long term consequence is very important factor to be corrected in the developing country like India.

P.2.29 DOES A CHANGE IN WORKING CONDITIONS INFLUENCE LABOUR FORCE PARTICIPATION AMONG WORKERS WITH A CHRONIC DISEASE?

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Objective This study investigated the association between changing working conditions and exit from paid employment during the following year among older workers with a chronic disease in the Netherlands.

Method Four annual waves from the Study on Transitions in Employment, Ability and Motivation (STREAM; 2010–2013) provided information on working conditions and demographics for 2838 older workers with a chronic disease, aged 45–64 years. The analytical sample consisted of 5491 responses from 2838 workers. Five types of working conditions were investigated; physical workload, psychological job demands, job autonomy, emotional job demands and social support. Discrete-time survival models were used to estimate the associations of change in working conditions in a particular year on the probability of exiting paid work for persons with a chronic disease in the following year.

Results Of the 2838 workers, a small majority was male (52%), most workers had an intermediate level of education (39.7%), and the mean age was 53.7 years (SD 5.50). Results

showed that working conditions substantially changed (i.e. difference of one standard deviation) between two waves. Social support and emotional job demands had the highest amounts of substantial changes (17% and 19%), while physical demands remained relatively stable (6% substantial change). After the first two waves, about 12% of workers with a chronic illness left paid employment. Results of discrete-time survival models are expected to be available in 2019 (by the time of the EPICOH conference).

Conclusion Ensuring that working conditions can be adapted to the needs of older workers who have a chronic disease may help to extend working life.

P.2.31 ASSOCIATION BETWEEN WORK AND CHRONIC OBSTRUCTIVE PULMONARY DISEASE REVIEW OF SYSTEMATIC REVIEWS

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Introduction Chronic Obstructive Pulmonary Disease (COPD) is a highly prevalent disease with reported prevalence up to 12%. Although smoking is one of the main factors in causing COPD, evidence from systematic reviews grows that also occupational exposures contribute. To examine whether work-related risk factors are associated with chronic pulmonary obstructive disease (COPD) a review of systematic reviews was performed.

Methods Medline was searched from 2009 until 20 June 2017 for systematic reviews. Systematic reviews were included when outcome data were described in terms of clinically assessed COPD by means of data on lung function and at least two levels of work-related exposure were mentioned (exposed versus low or non-exposed). One author selected studies and extracted data, two authors assessed study quality with AMSTAR.

Result Eight systematic reviews met the inclusion criteria. In all reviews various exposures to vapour, dusts, gases, and fumes (VGDF) at work are associated with COPD. Most of the included studies are cross-sectional and show a high heterogeneity in population, setting and – mostly self-reported – exposures. Two high-quality reviews including meta-analyses show associations and excess risk of COPD for work-related general exposure to VGDF with a summary odds ratio of 1.4 (95% CI 1.19–1.73) and for work exposure to inorganic dust with a mean difference in predicted FEV1 of –5.7% (95%CI: – 8.62% to – 2.71%).

Discussion Exposure to VGDF at work is associated with a small but increased risk of COPD. More detailed workplace measurements of specific VGDF are warranted to gain an insight into dose-response relationships.

P.2.32 CHANGE IN EMPLOYMENT STATUS IN SURVIVORS WITH OCCUPATIONAL CANCERS

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Background The aim of this study is to investigate the socio-demographic information and employment status for 2 years after diagnosis with occupational cancers.

Method In the Labor Registry Cohort of Taiwan during the period 2004–2015, 86 workers diagnosed with occupational cancers were identified. The cancer group included all kind of cancer diagnosed during this period. The cancer diagnoses were recorded according to the International Classification of Diseases for Oncology. Sex, age, industrial classifications, and occupational status were registered for the year 2004. The person's annual wage and salary income was registered in New Taiwan Dollar (NTD) and divided into tertiles of 16500–22800, 24000–40100, and 42000–43 900.

Results There were 86 eligible workers with occupational cancers in our cohort study. All eligible participants were categorized into 2 groups based on their work status. There were 61 unemployed survivors with mean age of 53.05±8.3 and 25 employed survivors with mean age of 46.2±9.2 (table 1). Employed survivors had younger age and lower salary income than unemployed survivors. At 2 year of follow-up (figure 1), there was substantial declined trend for employment percentage (from 100% to 29%). For change of salary income, increased percentage of salary income change was observed. In different age groups (figure 2), young group aged 28–45 years had significantly higher employment percentages than older groups aged 46–55 years and 56–71 years. Notably, there were elevated percentage of salary income change in older group aged 56–71 years.

Conclusion Our study highlighted that the workers with occupational cancers had apparent dilemmas in the workplace 2 years after diagnosis.

P.2.33 THE ASSOCIATION BETWEEN PATTERN OF SHIFT WORK AND SLEEP QUALITY AMONGST NURSES IN UNIVERSITY HOSPITAL IN NORTHEASTERN REGION OF THAILAND

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Introduction Shift work associated with many health problems, work performance and injury. Disturbance of sleep quality is the main mechanism of shift work effects. Nurses are at risk of many occupational hazards and also shift work. The information about shiftwork and the association of sleep quality amongst nurses of Thailand is still limit.

Objective To study the association of shift work and quality of sleep and which pattern has highest risk of poor quality of sleep amongst nurses in university hospital in Northeastern region of Thailand.

Material and method One thousand and one hundred nurses were met inclusion and exclusion criteria with 75.5%(n=831) participation rate. The data was collected via questionnaire including personal information, shift schedule, depression screening questionnaire, obstructive sleep apnea screening questionnaire and sleep quality questionnaire (PSQI). Cross-sectional analytical study was conducted.

Result All patterns of shift work amongst sample were irregular shift work. There were statistically significant association between shift work and poor quality of sleep. Predominant backward shift pattern has higher association