



Awarded COFAS Marie Curie fellows – For the FIIP programme



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Project: Acute Health Effects from Air Pollution in Sensitive Subgroups

Abstract: Numerous studies have shown the harmful effects of air pollution on human health, yet there is insufficient knowledge concerning susceptibility factors to air pollution. Recent evidence suggests diverse factors including age, gender, ethnicity, socio-economic status and various diseases processes (COPD, pneumonia, diabetes, hypertension, congestive heart failure and myocardial infarction), may confer susceptibility to air pollutants.

The main objective of my project is to quantify the role of short-term exposure to air pollutants on mortality in putative susceptible subgroups based on their previous hospitalization for various comorbid conditions. The specific tasks of the project are to:

- Investigate the short-term effects of air pollution on total mortality modified by previous hospitalization.
- Study cause-specific mortality and short-term exposure to air pollution
- Investigate the role of age, gender, socioeconomic status and long-term air pollution exposure on the association between short-term changes in ambient air pollution and mortality.

The study uses a large and unique data set which was obtained from the National Cause of Death Register and the National Hospital Discharge Register. By matching the cause of death register to the hospital discharge register different susceptibility subgroups will be created. Exposure data on ambient gaseous and particle pollutants will be collected from fixed monitoring stations in different vicinities of Stockholm. To examine associations between short-term exposures to air pollution on mortality I will use the case-crossover design, with time-stratified referent selection scheme and time series regression models.

Public health significance: The project aims to understand the role of air pollution in potentially susceptible population and contribute to better risk stratification and suggest strategies for secondary prevention.

Career plan: I obtained my PhD from the Centre for Occupational and Environmental Health, the University of Manchester in 2010. During the last years of my PhD I was involved in co-ordination of air pollution research projects. Subsequently I joined Karolinska Institute as a post-doctoral fellow to study the short-term effects of air pollution with emphasis on susceptibility factors. My current project which is supported by COFAS fellowship has provided an excellent opportunity to work with esteemed researchers in various divisions of KI, including many units of the Institute of Environmental Medicine. My future plan is to expand the search for various individual and societal susceptibility factors to air pollution. My other interest is to explore the role of long-term exposure air pollution in exacerbation of acute events and to investigate the role of climate change on human health.