

## Respiratory infections

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### Increased respiratory and cardiovascular hospital and primary health care admissions due to smog episode in Warsaw in January 2017

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**Objective:** Burning solid fuels (coal, wood) in households is one of the most important cause of poor air quality in Poland (they are responsible for 55.8% and 52.1% of fine (PM<sub>2.5</sub>) and coarse (PM<sub>10</sub>) particulate matter emission respectively). Together with unfavourable meteorological conditions (thermal inversion, high atmospheric pressure, no wind) these emission sources are conducive to the formation of smog episodes.

**Materials and methods:** Air quality (PM<sub>2.5</sub> and PM<sub>10</sub> concentrations) in Warsaw and admissions due to selected respiratory and cardiovascular exacerbations in January 2017 and January 2016 has been compared. The analyses were limited to Warsaw, due to the fact that the access to data has also been limited to medical information from this city only. Data on hospital admissions, visits to primary health care and specialist outpatient care has been received from the National Health Fund and data on the concentration of air pollutants (particulate matter primarily) from the Chief Inspectorate of Environmental Protection and Regional Inspectorate of Environmental Protection. The data has been analysed using the analysis of variance (ANOVA) and the comparison test between two proportions. All of the results has been considered as statistically significant for p-value<0.05.

**Results:** Depending on station in January 2017 PM<sub>10</sub> exceeded the 24-hour limit value and WHO recommendation for 19-22 days and PM<sub>2.5</sub> exceeded the WHO recommendation for 25-28 days. Statistically significant (p<0.05) differences has been observed in the number of people with exacerbations of asthma, ICD, cough or respiratory disorders who visited primary health care facilities and specialist outpatient care facilities, has been transported to hospital emergency department and hospitalized in January 2017 comparing with January 2016. However similar relationships has not been observed in case of hypertension and myocardial infarction – the number of cases was higher in January 2016.

**Conclusion:** Smog episode observed in Poland in January 2017 was one of the most serious such a phenomenon in at least last 14 years. Concentrations of harmful pollutants highly exceeded limit values and WHO recommendations. These results have been reflected in the number of people hospitalized and demanding other medical care due to the exacerbations of asthma, respiratory disorders or ischaemic heart disease. It has not been observed in other cardiovascular diseases being associated with high air pollutants concentrations.