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Titel des Beitrags:
Long-term air pollution exposure and lung function in 15 year-old adolescents living in an urban and rural area in Germany: The GINIplus and LISAplus cohorts.

Abstract:
The impact of outdoor air pollution exposure on long-term lung development and potential periods of increased lung susceptibility remain unknown. This study assessed associations between early-life and current residential exposure to air pollution and lung function at 15-years of age in two German birth cohorts. Fifteen year-old participants living in an urban and rural area in Germany underwent spirometry before and after bronchodilation (N=2266). Annual average (long-term) exposure to nitrogen dioxide (NO(2)), particles with aerodynamic diameters less than 2.5 ?g/m(3) (PM2.5) mass and less than 10 ?g/m(3) (PM(10)) mass, PM(2.5) absorbance and ozone were estimated to each participant's birth-, 10- and 15-year home address using land-use regression and kriging (ozone only) modelling. Associations between lung function variables and long-term pollutant concentrations were assessed using linear regression models adjusted for host and environmental covariates and recent short-term air pollution exposures. Long-term air pollution concentrations assessed to the birth-, 10- and 15-year home addresses were not associated with lung function variables, before and after
bronchodilation, in the complete or study area specific populations. However, several lung function variables were negatively associated with long-term NO2 concentrations among asthmatics. For example, NO(2) estimated to the 15-year home address was associated with the ratio of forced expiratory volume in one second to forced vital capacity (FEV(1)/FVC) and the mean flow rate between 25% and 75% of FVC (-3.5%, 95% confidence interval [-6.0, -1.0] and -297.4 ml/s [-592.6, -2.1] per 5.9 ?g/m(3) increase in NO(2), respectively). Nearly all effect estimates for the associations between the short-term PM(2.5) mass, PM(10) mass and ozone concentrations and the lung function variables were negative in the complete population. Early-life and current long-term air pollution exposures and lung function at the age of 15 years were not associated in the complete study population. Asthmatics may represent a vulnerable group.