The aim of the current study was to determine the impact and interaction of important influencing factors on the fraction of exhaled nitric oxide (FeNO). FeNO was measured in a population-based sample of 1250 middle-aged subjects from the KORA F4 cohort (Augsburg, Germany). Analysis of covariance models was performed including the factors age, height, FVC, FEV(1), sex, current smoking status, recent respiratory tract infection, and respiratory allergy. Geometric mean (SD as factor; 95% confidence interval as factor) FeNO was 13.9 (1.9; 1.033) ppb. FeNO significantly depended on age, height, smoking, infection and allergy. Smoking reduced FeNO by 21%, while infection and allergy led to increases by 9 and 11%, respectively. Increases in age by 10 years and in height by 10 cm were associated with increases of FeNO by 15 and 10%, respectively. Non-smokers demonstrated independent multiplicative superposition of factors affecting FeNO while the effect of allergy was virtually eliminated in smokers without infection. We conclude that in middle-aged non-smokers the effects of infection, age and height can be easily taken into account and do not significantly disturb the effect of respiratory tract allergies on FeNO. In current smokers, however, effects were
heterogeneous and information on smoking intensity seems to be useful for better adjustment.

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