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Title: Feasibility of measurements of fraction of exhaled nitric oxide (FENO) in a large population based study (ADONIX)

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Body: FENO is used in epidemiological studies as a non-invasive marker of airway inflammation. Some patients do not manage to fulfill the measurement criteria. The objective was to examine if there are any differences between subjects that do and do not manage to perform a correct FENO measurement, mainly relating to respiratory disease and differences in lung function. The Adonix-cohort comprises a general population sample of 6,296 subjects (52% women), aged 25 to 75 years. They have all been examined with FENO (NIOX, Aerocrine™), lung function, questionnaires and blood samples. To fulfill the measurement criteria for FENO the subjects had to exhale at a 50 mL/s \pm 10% (mean level 45-55 mL/s and allowed instant flow 40-50 mL/s) during the last 3 seconds of the exhalation, in accordance to international guidelines. 217 subjects (3.4%, 67% women) were unable to perform a correct test. These subjects were characterized by significantly lower lung function; FVC 3.6 vs 4.2 L ($p<0.001$) and FEV1 2.8 vs 3.3 L ($p<0.001$), but also lower predicted lung function; FVCpred 105.3 vs 109.9 % and FEV1pred 98.3 vs 103.4 %. In addition, we found a statistically significant over representation of subjects with asthma (13.1 vs 8.8 %) in the group that did not manage to perform the test. In conclusion, the overall success-rate of FENO measurement was high. Subjects that failed the test were more likely to have lower lung function and more likely to have asthma than subjects that fulfilled the measurement criteria.