

Measurement of peak expiratory flow (PEF) by personal peak flow meter

Measurement of PEF by personal peak flow meter (PPFM) is used for home monitoring of airway status (to reveal possible airway obstruction) in patients with bronchial asthma. Investigation of PEF by PPFM is fast, non-invasive and cheap. It can be performed anytime during the day, resp. according to needs of the patient or instructions of the doctor. Since values of PEF vary during the day, their control at least twice daily is recommended (after awake in the morning and 12 hours later).

Value of PEF and its diurnal variability represent a valuable information for evaluation of severity of asthma and determination of best treatment. Decreased PEF and higher variability of PEF values during the day (more than 20 %) may indicate deterioration of the asthmatic status several hours before occurrence of clinical signs. Early administration of the treatment may prevent the asthma attack or may at least alleviate the course. In home monitoring of PEF, the measured value is compared with personal norm of the patient (see an attachment). *Personal norm of the patient* is the highest i.e. the best value of PEF measured in the observed period between the asthma attacks (in the last three years). The purpose of the treatment is to keep the values of PEF between 100-80 % of personal norm of the patient, values between 80-60 % represent mild airway obstruction, values between 60-45 % moderate airway obstruction and values below 45 % indicate severe airway obstruction.

Reference values of PEF depend on age, gender, height and weight of the person. Normal value of PEF in an adult is approximately 300-350 L/min, i.e. 5-6 L/s (e.g. in 40-year-old man of 170 cm height it is approximately 370 ± 108 L/min resp. 6.2 ± 1.8 L/s, in 40-year-old woman of 160 cm height it is approximately 306 ± 84 L/min resp. 5.1 ± 1.4 L/s) (see attached standards).

Needs

Personal peak flow meter, disinfection solution, paper wool, nose-clip.



Methods

Clean the mouthpiece of PPFM by disinfection solution. Set a red mark on the scale of expiratory flow (in L/min) to the lowest value. Inhale maximally, close the nose by fingers or by nose-clip and exhale maximally into the PPFM. To obtain precise values, hold the PPFM in the horizontal position. Read the value of PEF directly on the scale of PPFM in L/min. For calculation of PEF in L/s divide the result by 60. Repeat the measurement 3-times and write down the values. The individual results obtained in the same time in the same person cannot vary of more than 10 %. Calculate an average value of PEF and compare it to the reference values in the attachments.