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EDITORIAL

FEV_1 or peak flow for measuring airflow obstruction in primary care
Is it a useful debate or just missing the point?

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The diagnosis of COPD is defined by the presence of persistent airflow obstruction and is traditionally expressed as a reduction of the FEV_1 and accompanied by a reduced FEV_1/FVC ratio. Other measures of airflow obstruction exist but the characteristic pattern that has been adopted as the accepted convention results from the volume time relationship during a forced expiratory manoeuvre. The measurement of FEV_1 under these circumstances is acknowledged to be useful to make the diagnosis, stage the disease and predict prognosis. Until recently the assessment of descriptive lung function in COPD even in its most simple form has been the domain of secondary care lung function laboratories. This is likely to change because of the wider availability of testing equipment and the changing responsibility towards primary care for COPD.

Two review articles in this issue of the journal debate the value of the measurement of FEV_1 against the simpler measurement of peak expiratory flow in the primary care management of COPD. The arguments in the debate centre round the perception that FEV_1 is both difficult to measure and also central to the day to day management of the condition. Neither of these perceptions is likely to be true.

The FEV_1 has stood the test of time as a simple, robust and reproducible reflection of airflow obstruction. It can be used to stage the disease and infer prognosis. It only requires the most simple of spirometers, a minimum of training and a few quality control measures. It takes no more time than the measurement of blood pressure or blood glucose. Repeated measures after bronchodilator are unnecessary for management. However the measure of FEV_1 alone sheds no light on the mechanism of the airway obstruction. This may be provided by the inspection of expiratory and inspiratory flow-volume curves that are often produced by the same equipment but require a slightly different manoeuvre. In this case the appearance of the curves may be able to distinguish emphysema and upper airway obstruction from small airways disease. Other numerical values such as peak expiratory and inspiratory flow can also be derived from the test. There is a significant difference in complexity between the simple measurement of FEV_1 and the derivation and interpretation of flow-volume curves. The additional diagnostic value of the flow-volume curve is promoted by Chavannes as an advantage of spirometry [1]. However the distinction between this and the simple measure of FEV_1 is overlooked. Routine recording of FEV_1 should easily be possible in primary care or serially by the patients themselves. Quality control in a primary care setting seems as good as a hospital measurement [2]. Any errors in the measurement of FEV_1 will result in underestimation of function rather than false reassurance. Home measurements of FEV_1 have been conducted by patients after transplant without difficulty for many years to monitor their lung function for signs of rejection.

As an alternative to FEV_1, peak flow measurement is suggested by White as a robust and familiar method to follow the progress of COPD [3]. The

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advantages include the simplicity of the technique and the potential for unsupervised and repeated measures. There is some interest in the value of multiple measurements of peak flow to identify trends in airway function or highlight exacerbations. There are however some major deficiencies in using peak flow measurements in COPD compared to FEV_1. Firstly very little is known about the longitudinal behaviour of peak flow in COPD and it does not compare to epidemiological and prognostic value of FEV_1. Peak flow has not been used to stage COPD in any of the guidelines or statements but like FEV_1 also offers no explanation of the cause of the airway obstruction. Nevertheless the evident value of peak flow recording in asthma may offer some hope that it may be helpful in describing the prodromal features or recovery from exacerbation in COPD.

For the general practitioner the current evidence suggests that the FEV_1 should remain the measure of airway function of choice for the diagnosis and staging of COPD. However there may be some merit in exploring the relative benefits of FEV_1 and peak flow in the context of monitoring and exacerbation. The measurement of unadorned FEV_1 is simple and could easily be conducted in the primary care setting but the conduct and interpretation of flow-volume loops may need more investment.

In many ways the debate about which test of airway function is best is missing the point. For most people with COPD the demonstration of airway obstruction is simply the establishment of diagnosis. Only transplantation, lung volume reduction surgery or possibly smoking cessation are capable of improving FEV_1. Drug therapy generally does not halt the rate of decline of lung function though there is some recent suggestion that inhaled corticosteroids may have a small effect [4]. This minor benefit is unlikely to be detected on individual testing. However repeated testing of FEV_1 over time every 2 or 3 years may identify those smokers who are at risk. COPD is defined by the presence of progressive poorly reversible airflow obstruction and therefore it seems perverse to use measurements of FEV_1 or peak flow to judge a therapeutic intervention. As airway function declines the consequences of COPD are reflected in increased symptoms, diminished physical activity, frequent exacerbations and reduced health status. Therapy should be aimed at reducing the impact of the disease and outcome recorded by more appropriate and relevant measures. Of course spirometry is important for diagnosis and useful for long term monitoring. Peak flow may have a future but this remains to be determined. If you want to know how COPD affects your patient it may be better to record the MRC dyspnoea scale!

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