

Assessing bronchodilator reversibility: agreed standards are urgently needed

Only when spirometry is performed in a uniform way can we expect its widespread use in primary care

SPIROMETRY APPEARS TO BE an undervalued investigation in general practice, despite its capacity to inform clinicians about diagnosis, severity assessment, and optimal treatment for airways disease. The omission of spirometry from a thorough assessment of patients with breathlessness seems just as inappropriate as failing to measure the blood sugar level in a patient with thirst, polyuria and blurred vision. There are substantial individual and community risks in not performing a simple diagnostic test such as spirometry. In Australia, underdiagnosis of chronic obstructive pulmonary disease (COPD) and asthma is a documented consequence of this.^{1,2} Yet, anecdotal reports from general practitioners suggest that it is difficult to incorporate spirometry into the consultation, and there have been variable outcomes after systematic efforts to teach optimal performance of the test.^{3,4}

There are many reasons for this, including the complexity of properly performing the test, the cost of equipment, the time taken to perform bronchodilator reversibility testing, and controversy regarding interpretation of results. Although Australian guidelines for the diagnosis and management of

asthma and COPD^{5,6} clearly define the central role of spirometry in making a diagnosis and assessing severity, the practical implementation of the test remains a challenge.

Bronchodilator reversibility testing should inform the clinician about the presence and severity of airway obstruction and its reversibility in response to a standard dose of bronchodilator. Once this information is reported, the clinician can determine — in combination with the other information available — whether asthma or COPD is likely. There is considerable overlap in the bronchodilator responsiveness of these two diseases, so that spirometry may not be diagnostic. However, the consistent performance and interpretation of any test is essential to maximise its value, allow comparison of results and to ensure its sensitivity and specificity are maintained.

In this issue of the Journal (*page 610*), Borg et al report the results of a survey of 60 lung-function laboratories in Australia and New Zealand, and highlight marked differences between laboratories in performance and interpretation of bronchodilator reversibility testing.⁷ These variations, in a

setting where rigorous quality assurance and standardisation would be expected, indicate that substantial work is needed to bring uniformity to spirometry and establish commonly agreed criteria for assessing reversibility of airway obstruction.

Do such criteria exist? There are international guidelines for the performance and interpretation of lung-function tests,^{8,9} and respiratory laboratories would generally aim to achieve these standards, although they may be more difficult to attain in primary care. Recommendations for assessing reversibility are given in a Thoracic Society of Australia and New Zealand (TSANZ) position paper.¹⁰ These are similar to the American Thoracic Society (ATS) standards, which indicate that a 12% increase in forced expiratory volume in 1 second (FEV₁) over baseline and a minimum 200 mL improvement in FEV₁ or forced vital capacity (FVC) constitute a positive response to bronchodilator. However, the TSANZ guidelines lack detail, particularly with regard to the type, dose and timing of bronchodilator administration, the factors that varied most between laboratories. By contrast, the ATS guidelines indicate that bronchodilator reversibility should be assessed by use of a short-acting β_2 -agonist, equivalent to 200 μ g salbutamol or 500 μ g terbutaline by a metered-dose inhaler. Although laboratories may choose to enhance the sensitivity of the test and optimise delivery of β -agonist by using spacers, it does not appear appropriate to administer high doses of combination bronchodilators by nebuliser for conventional reversibility testing.¹¹ It is also outside current ATS guidelines for standardisation of reversibility testing.

Is this variability between respiratory function laboratories of concern, and what are the implications? Firstly, comparisons between results from different laboratories should not be made with the assumption that the test has been performed under identical conditions. Secondly, it is essential for clinicians referring patients to respiratory laboratories to know the local features of spirometry testing to be able to interpret the results appropriately. Thirdly, it would be most desirable, and many would argue essential, for Australian laboratories to agree to a set of standards and apply them universally for spirometry and reversibility testing. Fourthly, implementing spirometry testing in primary care and educating and upskilling GPs is unlikely to succeed without an agreed position on acceptable standards for performance and interpretation.

Among respiratory scientists and thoracic physicians, there is a range of views on the feasibility of implementing more widespread use of spirometry in primary care. Although it is a highly desirable goal, expressly supported by the peak bodies in asthma and COPD care, there are major challenges. Many argue that accurate performance and interpretation of bronchodilator reversibility testing is difficult and that GPs should be offered a range of options, which should include greater access to laboratories and pathology services for spirometry. There is a plethora of articles which provide background information to assist in implementing quality control procedures to standardise equipment and test performance, and provide reference values and guidelines for interpretation of results. Despite these specifics, the ATS guidelines frankly acknowledge "There is no clear consensus on what constitutes reversibility in subjects with airflow obstruction". Nev-

ertheless, agreement should be reached regarding the way in which a standard test is performed, even if reaching agreement on its interpretation is difficult.

The article by Borg et al highlights the urgent need for agreed standards in Australia for spirometry. The TSANZ and the Australian and New Zealand Society of Respiratory Scientists are in the best position to take up this urgent task. Transferring this expertise into community practice, either in specialist or in primary care, remains a challenge that must be met if we are to maximise the possibilities for diagnosing and managing airways disease.¹² One of the perceived hurdles to this process is the Medicare Benefits Schedule descriptor for office spirometry (Item 11506), which specifies that the test should be done before *and* after administration of bronchodilator to attract payment. The TSANZ and the Royal Australian College of General Practitioners have prepared a submission to have this descriptor changed to allow payment for testing before *or* after administration of bronchodilator.

The availability of a wide range of affordable, electronic spirometers with built-in software for determining reference values, along with a "Buyers guide to spirometry", currently being written, will add to the educational resources needed to help GPs in their use of spirometry for assessing patients with breathlessness. Standardised guidelines should greatly assist the implementation of spirometry in primary care and result in more appropriate treatment and better outcomes for patients.

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