

Protecting yourself and your patients during spirometry

By Brian Berendts, RN, BSN, CCRC

An allergy and asthma office can be a hectic and fast-paced environment with a variety of time-intensive tests being performed simultaneously. Nevertheless, it is important to spend time following procedures that reduce potential risks associated with spirometric testing.

The same position (e.g. sitting or standing) should be maintained from test to test. To ensure patient safety, it is best to perform the test in the sitting position, unless this restricts the patient from giving a maximal effort (e.g. obesity, pregnancy). During the maneuver, the patient may become light headed and even faint (syncope) due to interrupted venous return during expiration. The patient should be warned not to hold their breath, prolong the expiration longer than needed, or bear down when performing the maneuver that, in some patients, could lead to a common faint reaction (vasovagal syncope).

Technicians should be enthusiastic coaches but also remember to keep an eye on the patient during the procedure. Prior to performing spirometry, ask the patient about a history of dizziness or untoward reactions during prior tests. A slow Vital Capacity Maneuver should be considered to avoid syncope in at-risk patients but a FEV1 is not obtainable with a SVC. If you wish to obtain the FEV1, it may be advisable to shorten the time of the forced expiratory maneuver in those patients at risk for fainting.

The American Thoracic Society recommends that spirometry not be performed if the patient has experienced a myocardial infarction in the last four weeks. Testing should be avoided in patients with recent abdominal surgery.¹ The spirometry training course approved by the National Institute of Occupational Health and Safety recommends that potential contraindications for performing spirometry also include: hypertension, pregnancy, heart disease, diabetes, incontinence, a hernia, bleeding disorder, or history of a stroke or severe head injury.

The incidence of nosocomial infections has increased and specific precautions are recommended to reduce risk of transmission from potentially infected patients. Infection control begins with the simplest of procedures that has been taught to us since the first day of training: proper hand washing. This simple and often overlooked procedure should be done before and after contact with every patient. Disinfecting or sterilizing reusable equipment should be done following the manufacturers recommendations. Using a disposable disinfectant cloth to wipe off the equipment handled by the patient and the technician can easily reduce the likelihood of cross-contamination.

Volume-based spirometers which use a closed circuit technique should be flushed between subjects with room air at least five times over the entire volume range of the spirometer to enhance clearance of droplet nuclei.² A volume or flow spirometer that uses an open circuit technique, single-use, disposable mouthpiece with a bacteriostatic filter or a low-resistance one-way valve are recommended. However, the filter or valve must demonstrate that it does not alter the spirometry results. Disposable in-line filters must reveal accurate and precise results when the

filter is installed. Check with the manufacturer of the spirometer for filter recommendations or with the filter manufacturer for evidence that the results are un-altered.

Performing spirometry can be done quickly and accurately, but taking a few moments to further assess the patient and the environment can make the experience a safe one for the patients, the technicians and the other staff members in the office.

Acknowledgements

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References

1. Miller MR, et al. ATS/ERS Task Force: Standardization of Lung Function Testing; Standardization of Spirometry. Eur Respir J 2005; 26: 319-338.
2. Miller MR, et al. ATS/ERS Task Force: Standardization of Lung Function Testing; General Considerations for Lung Function Testing. Eur Respir J 2005; 26: 153-161.