Spirometry Training Courses

A Position Paper of

The Australian and New Zealand Society of Respiratory Science &

The Thoracic Society of Australia and New Zealand

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Spirometry Training Course Definitions

The aims of a Spirometry Training Course are to enable participants to understand the concepts of spirometry and apply good spirometry testing practice including the measurement, interpretation and quality assurance.

Spirometry Training Courses should be coordinated and run by a suitably qualified person with substantial experience in the theoretical and practical aspects of spirometry measurement and interpretation (as judged by the Spirometry Training Committee e.g. a Respiratory Scientist with CRFS plus 5 years experience in a respiratory Laboratory).

Aim

The aim of this position statement is to assist health professionals wishing to teach spirometry by establishing and clarifying the minimum requirements of a spirometry training course. Defined are the core components, course duration and frequency required for endorsement of a Spirometry Training Course. We also establish a mechanism for those wishing to apply for endorsement of their Spirometry Training Course.

Introduction

Spirometry is the most commonly performed test for assessing respiratory function. Spirometry assists with the diagnosis and management of many diseases affecting the lungs such as asthma, chronic obstructive pulmonary disease and restrictive disorders. The value of spirometry in the detection and management of lung disease is well recognised and physicians treating such patients are encouraged to include the measurement in their clinical practice. Spirometry is also being performed in the wider medical community for the assessment of asthma and COPD, as well as occupational and sports medicine. There is now an international recommendation that spirometry be introduced as a screening tool for the early detection of COPD in middle aged smokers.

To some extent this increased use of spirometry beyond the lung function laboratory has been facilitated by the availability over recent years of affordable and portable computerised flow-based spirometers. These flow-based spirometers are relatively easy to use and they have allowed an increase in access to spirometry. It is important however, that these emerging spirometry services are aware of the appropriate standards in order to provide and maintain quality spirometry measurements and interpretation. Accompanying this increased activity is the growing need and demand for spirometry training courses.

Although spirometry is a relatively easy test to perform, it is often not appreciated that clinically useful results are dependent on the accuracy of the spirometer, and the competence and knowledge of the operator in instructing and motivating the patient to perform the correct breathing manoeuvre. To achieve quality spirometry the operator must be able to interpret results to identify and overcome instrument and/or patient related problems in order to report results that are both accurate and reproducible. The purpose of a spirometry training course is to teach these skills through the integration of both theory and practice. It is prudent for health

professionals to attend a course to obtain the necessary skills required to perform quality tests.

In a New Zealand study of 30 primary care practices Eaton *et al.* found that acceptable and reproducible spirometry was met only 13.5% of the time when the operators had received only a brief training session. However, when practices relied purely on the spirometer manual as 'training', acceptability criteria were only met 3.4% of the time. These poor quality results were obtained despite the fact that the clinical practices were using a spirometer that provided feedback to the operator during a testing session about the quality of each successive test. This study shows that a brief spirometry-training session is better than no training, but it is inadequate for maintaining quality spirometry.

There are several spirometry training courses available to health professionals within Australia and New Zealand, but the content and practical components, course duration and quality, as well as experience and knowledge among course presenters/tutors/demonstrators, has wide diversity.

The purpose of this paper is to identify the core components (see below) that should be included in a comprehensive spirometry training course. It is recommended that these be used as a minimum standard and as the basis for the endorsement of spirometry-training courses. The Australian and New Zealand Society of Respiratory Science (ANZSRS) is well placed to determine if a spirometry training course meets the minimum standard and to provide course endorsement.

In 2002, the ANZSRS formed the Spirometry Training Committee whose purpose was to produce a document describing the components that should be taught at a spirometry training course. The criteria established by the Spirometry Training Committee should be included in a Spirometry Training Course to qualify for ANZSRS endorsement. There was a face-to-face meeting in Melbourne August 8, 2002; all other communication has been by telephone or e-mail.

The desired outcome of endorsing Spirometry Training Courses is to set a minimum standard for course content and duration. This endorsement should help meet the needs of health professionals by assuring they are being taught the necessary skills to enable them to deliver a quality spirometry service to patients.

Core components of a Spirometry Training course

The Spirometry Training Committee agreed that the following core components should be included in a Spirometry Training Course if it is to be granted endorsement by ANZSRS:

1. **Introduction**
   - What is spirometry?
   - Definition
   - History
   - Vol-time & flow-volume curves
   - Definitions of spirometric indices (eg FEV_1, FVC, FEV_1/FVC)
   - International standards for Spirometry (ATS, ERS)

2. **Purpose of spirometry**
   - Indications for testing
   - Contraindications for testing

3. **Spirometers**
   - Volume based
   - Flow based
   - Relative merit of each type of spirometer
   - Minimum performance requirements
   - Design specifications

4. **Calibration**
   - Definition
   - Frequency
   - 3L syringe
   - Biological control

5. **Test Performance**
   - Instruction to patient
   - Demonstration
   - Performance of manoeuvre
     - FV loop
   - Acceptability Criteria
   - Reproducibility Criteria
   - Reversibility Assessment
     - Choice of bronchodilator
     - Method of administration
     - Time for peak efficacy
   - Troubleshooting
     - Instrument
     - Patient

6. **Selection of Best Test**
   - Indices
   - Curve

7. **Predicted Reference Values**
   - Definition
     - Normal range (LLN)
   - Selection of suitable reference equations
   - Limitations of reference equations

8. **Interpretation**
   - Diagnostic pattern
   - Assessment of severity
   - Reversibility
   - Serial trend

9. **Quality Assurance**

- Ongoing Training
- Infection Control
- Equipment stability
- Record Keeping
    - Patient data
    - Equipment documents

10. **Other**

- Spirometry training courses must be attended. Distance learning without a practical component is neither acceptable nor applicable for practical spirometry training.

- Resource material provided to course participants should contain key information on spirometry as well as a recommended reference list.

- The recommended duration of a spirometry training course is at least 10 hours, particularly if participants are spirometry naive.

  For a General Practitioner's shortened course, if only teaching interpretation and a general description of spirometry performance, 4 hours is recommended.

- An appropriate ratio of participants to demonstrators for the practical training component is 5:1.

- A knowledge and practical skill assessment of participants should be included on completion of the course and Course coordinators should submit details of their assessment techniques.

- A refresher course should be attended within the first 12 months of completion of the initial course, and thereafter every three years.

- Course coordinators should have participants complete an evaluation at the end of each course and use the feedback to update and improve their course when appropriate.

- ANZSRS and TSANZ will only recommend an ANZSRS Endorsed Spirometry Training Course.

- The cost of attendance at an endorsed spirometry training course is at the discretion of the course coordinators.

Note 1. Spirometry training courses will be endorsed after the scrutiny of the course content and resource material by at least three members of the ANZSRS Spirometry Training Committee. Applications for course endorsement will be submitted by the principal course coordinator who should include the qualifications and experience of all course tutors. If tutors change at a later date the substituted tutor's qualifications should be forwarded to ANZSRS to enable an update to the register. The endorsement is valid for these tutors only. It will be the applicants' responsibility to provide sufficient details of their course content to demonstrate that the core components are included. Members of the ANZSRS Spirometry Training Committee shall not participate in the endorsement of any course that they are personally associated with. The cost of endorsement at the time of writing is $100, this fee is to cover Society costs and may be reviewed in the future.

Note 2. ANZSRS will maintain a register of endorsed courses including the names of specified tutors. ANZSRS endorsement of a spirometry - training course will be valid for 3 years. Thereafter, the course will require re-validation. If the course content or duration of the course is changed it must be re-validated.

Note 3. Endorsed spirometry training course coordinators will be expected to provide an annual report to the Spirometry Training Committee which includes the dates and number of participants, the names of the tutors, the number of successful participants per course.

References

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