HERMES Spirometry: the European Spirometry Driving Licence

Introduction

Spirometry testing is the most widely practiced, most common and adaptable of all lung function tests and spirometers are used as a key instrument in the diagnosis of patients with respiratory disease [1]. As a leading cause of death worldwide responsible for some 9.4 million deaths [2], and further increases predicted by 2020, the management of lung disease becomes even more dependent on spirometry testing. Yet evidence of widespread under-diagnosis [3] and, as a consequence, reduced quality of life and premature death [4] present cause for concern.

The grim reality evident in the presented studies highlights a real lack of training [5], under-utilisation of spirometers [6] and diagnosis based on inaccurate results [7]. It is reported that chronic obstructive pulmonary disease (COPD), the most prevalent of the lung diseases, is under-diagnosed in 75% of cases [3]. The outcome of delayed diagnosis deters effective management and treatment, which ultimately aims to relieve symptoms, prevent disease progression, improve health status and prevent premature death [4]. While educational modalities were introduced at a national level to train spirometry practice in some European countries, a survey carried out by the European Respiratory Society (ERS) in 2008 confirms that no formal training in, assessment of, or qualification in spirometry takes place in many other countries. Using the HERMES project framework (Harmonised Education of Respiratory Medicine in European Specialties), a new Spirometry initiative aspires to train and qualify healthcare professionals best able to deliver high-quality spirometry. The potential benefits of standardised educational documents and training in the practice of spirometry are real and significant, strengthening patient care and improving quality of life for respiratory disease patients.

HERMES

Begun in 2005, the value of the HERMES initiative is that it provides consensus-based standards and indicators to improve quality and practice of education and healthcare, and establishes a guide for teachers and students of subspeciality respiratory medicine. To date, the Adult HERMES and Paediatric HERMES projects have produced internationally recognised educational documents and activities. If we consider the nature of these projects, it is clear that both the Adult and Paediatric HERMES projects appeal to a specific target audience, specialising in precise fields of respiratory medicine. The very essence of the Spirometry HERMES project is, in fact, different. For this purpose, a new proposed structure of four key development areas shall be implemented to ensure all facets of the educational cycle are covered (fig. 1).

1. Complete Training Programmes
2. Guidelines for certification of ERS Spirometry Training Programmes
3. Development of educational materials including training manuals, supporting online modules, videos and a knowledge test for part I
4. Assessment guidelines, production of assessments and assessment criteria to test Spirometry Theory and Spirometry Practice
This process of establishing ERS educational standards in spirometry are international in their development and actively overseen by an expert Task Force representing 13 countries across Europe (fig. 2). The very essence of the HERMES initiative is to offer structured support for educational reform to take place. Evolution of the HERMES ideology presupposes that each project phase recommends uniform educational criteria to be adopted and considered as best practice in training. Considering the statistical data confirming the gravity of lung disease worldwide, the mission of the HERMES spirometry project is to follow this intricate path to train and qualify health professionals to perform high-quality spirometry tests as well as increasing the number of accurate and repeatable spirometric measurements to be used in the diagnosis of patients with respiratory symptoms. The purpose of this publication is to present the outcome of the first two phases of the HERMES Spirometry Driving Licence project.

**Historical background**

Standardisation of spirometry [8], access to spirometers [4] and use of accurate and repeatable spirometry measurements [3] are requirements central to the diagnosis, management and treatment of lung diseases. The scale of the role spirometry plays in identifying patients at risk of disease or of perioperative pulmonary complications such as COPD, lung cancer, heart attack, stroke and asthma [9] dictates that the tools required to practice spirometry be given precedence within the medical arena. The available statistics echo the true reality that spirometers are underutilised due to absence of teaching practices [6], and there is an extensive call for educational reform in the training of spirometry within this medical domain [1, 3–7, 10].

If the aforementioned requirements to practice quality spirometry are considered, to some extent the ERS/American Thoracic Society 2005 Guidelines in Spirometry Practice and, in recent years, development of the spirometer, guaranteeing widespread distribution, offer some relief to spirometry practitioners. Yet, based on analysis of 14 countries within Europe, only four reported the opportunity to attend a spirometry training course approved by a professional body (fig. 3).

With the intention of producing a driving licence in spirometry for health professionals to reach competency level, the Task Force presents the first of the educational documents; Part I *Spirometry Knowledge and Skills*, Part II *Knowledge and Competence in Spirometry Measurement* (leading to the European Spirometry Driving Licence Level II) and Guidelines for the Certification of ERS Spirometry Training Programmes.

**Methodology**

The HERMES European Spirometry Driving Licence (ESDL) project was officially launched at the ERS Annual Congress in Berlin 2008 with the aim of harmonising training in spirometry throughout Europe to establish and raise
European standards in the skills required to qualify and practice as an expert in this field. Rationale for the project was justified following results of the ERS benchmark analysis carried out in 2008. As well as confirming a clear disconnect in spirometry training practices, insight into expectations of structure, duration, delivery and assessment that a spirometry training programme should possess were offered. Laying the foundations to move forward, the first step the Task Force would take was to produce a training programme outline utilising the well established consensus process, the Delphi technique [11].

**Phase 1 – Development of the Training Programme Outline**

Within the framework of the Delphi methodology, and following the steps taken by the HERMES giants, Adult and Paediatric, the Task Force began the process of designing knowledge items which should be included in a training programme for spirometry. A further panel of experts from 10 European countries was also identified as key contributors to project development. In line with the Delphi technique, the Task Force prepared a first survey round and received responses from 673 experts. The aim of this survey was to gather a larger representation from spirometry practitioners of both qualitative and quantitative data on the perceived skills required for training to endorse a qualification in spirometry practice.

At the ERS Annual Congress in 2009 in Vienna, results of the first survey round were presented during a plenary session including all Task Force and national respondents. High consensus levels for each of the items assume that the target of the survey was reached. With the inclusion of some new items and modification of existing items based on comments within the survey, a second Delphi round of 230 experts confirmed the final training programme outline which was approved by the Task Force in May 2010.

As the training programme items were now in place, a new process of developing rationale for training including the course aim, target audience, pre-requisites for training and teaching format would need to be developed. A skeleton structure utilising a number of references [12, 13], was presented to the Task Force in May 2010 and so began the final steps in the development of the European Spirometry Driving Licence Training Programme (fig. 4).

**Phase 2 – Development guidelines for certification of ERS Spirometry Training Programmes document**

A further output from this landmark May 2010 Task Force meeting was the generation of a number of operational issues relating to the Spirometry Training Programme. Questions surrounding venue specifications, trainer qualifications and minimum numbers of spirometry tests to be performed, only served to highlight imminent complexities that would need to be addressed.

Between May and the upcoming September 2010 Task Force meeting, the need to stipulate a

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**Figure 3**

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<tr>
<th>Percentage</th>
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<tbody>
<tr>
<td>On the job</td>
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<tr>
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<td>Spirometry course approved by a professional body</td>
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<td>Other</td>
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**Figure 4**

The first phase in the European Spirometry Driving Licence Training Programme.
robust structure including measurable elements and criteria to ensure best practices in training and dissemination of the ESDL became obvious.

Guided by the Criteria for Accreditation of ERS European Training Centres in Adult Respiratory Medicine document generated from the Adult HERMES Task Force [14], the framework provided fundamental standards for training programmes to follow. By September 2010, six sections were presented and approved and the Guidelines for the certification of ERS Spirometry Training Programmes document was established (fig. 5).

Results

If we consider the objective of the first two project phases to produce a training programme outline and the rationale and guidelines to launch a complete spirometry training programme, the presented documents symbolise the first challenge to lead this initiative toward its end goal, each constituting the minimum recommended criteria that training programmes should consist of for the training of spirometry at a European level.

Phase 1 – Development of the Training Programme Outline

Drafted by the Task Force during the first of their meetings, 47 knowledge items and skills were presented and included in the first Delphi round. Slight modifications and the addition of new items were made following the first Delphi. Following a second survey round, the training programme was agreed by the Task Force in May 2010, consisting of eight modules and 63 items including prerequisites for training. To ensure all components of an educational training programme were covered, and supported by the ERS education department, further development of the rationale for training was completed by the Task Force during the May meeting.

In order to train practically competent health professionals, it was necessary that the training programme be divided into two distinct training parts:

1. Part I Spirometry Knowledge and Skills covering important spirometry theory and demonstrate best practices in spirometry technique
2. Part II Knowledge and Competence in Spirometry Measurement will ensure participants perfect technique, consider pitfalls and errors in spirometric measurements and award a qualification to merit participants as practically competent to perform high quality spirometry tests

In order to prepare for Part II, the Task Force recognised the need to allow time for practical experience and first hand exposure between training programmes and so have stipulated in the guidelines that all participants must complete the ERS Spirometry Workbook before attending Part II.

Published documents on the complete Training Programme of both Part I Spirometry Knowledge and Skills and Part II Knowledge and Competence in Spirometry Measurement are the result of the first project phase.

Phase 2 – Development guidelines for accreditation of ERS Spirometry Training Programmes document

The objective of this phase was to generate a structured, simple and flexible model to allow dissemination of training across all health professional settings who practice and teach spirometry across Europe. Utilising specifications within the training programme outline, each of the six sections within the document lists the minimum measurable elements for training programmes to follow to qualify certification
and award ERS European Spirometry Driving Licence. In September 2010, the document sections were approved and a comprehensive document outlining Guidelines for the certification of ERS Spirometry Training Programmes was completed.

**Discussion**

The variety of HERMES initiatives are evolving based on an increasing demand for improved and systematic practices of education in specialist areas of respiratory medicine. Evidence of a current gap in training needs for medical practitioners merely offer conviction to the HERMES Task Forces and remind them of the need to supply this demand. The HERMES spirometry initiative is also the product of this inherent path, emerging from an evident disparity in training criteria in the training of spirometry. Yet producing, implementing and maintaining robust educational activities and documents in specialist medicine are not without challenges.

**Challenges**

**Application and quality assurance**

Ensuring all healthcare institutions demonstrate the ability to apply predetermined standards set out within the HERMES documents is embedded in complexity. The overarching goal of this project milestone, phase 2, was to produce a solid foundation of structured guidelines for certification of spirometry training programmes to follow. As the Task Force progresses through the project continuum, a new emphasis moves from documenting minimum criteria to application. In fact, the final section of the Guidelines for certification of ERS Spirometry Training Programmes was established to produce those procedures required for the certification process. For the first time, consideration of the approval body, the application process, the certification process and costs is realised, project success demands a vigorous, adaptable and inexpensive model.

To certify is to apply standards as a basis of quality assurance. Traditionally, accreditation or certification of educational programmes within the medical arena has been based on the well-established practice of site visitation [15]. However, site visitation is a resource-dependant process, the costs beared by the training centre and, as a consequence, too often excluding those unable to afford external and voluntary certification. The next stages will address this process of certification and it is the intention of the Task Force to publish Section 7 Approval Process and Distribution of ESDL Certificates at a later date which will employ new and diverse methods of quality assurance including preparation of standardised educational materials to be used during training, online training modules, and use of generic assessment methods all contributing as a means of quality control.

**Dissemination of the European Spirometry Training Programme**

Applying minimum standards not only offers guidance for trainers of spirometry to follow but also present an incentive to improve, or for some countries introduce, structured training and consequently dissemination of a European spirometry qualification. To accomplish success at this project step and indeed looking to future developments for the project, the initiative necessitates distribution to a wide audience of health professionals across a number of medical settings. Consequently, achievement demands educational documents which are simple, robust and adaptable. It is intended that the documents provide a guideline for training programmes of spirometry to follow and to allow flexibility across international, cultural and regional boundaries, which will allow delivery at local level. Support for ESDL trainers will be provided through standardised educational materials as well as a “Train-the-Trainer” course, which will be held each year at the ERS Annual Congress. Moreover, this HERMES project finds itself confronted with the fresh challenge of translation. A new wave of HERMES now looks towards distributing educational documents and activities to national delegates and respondents for translation. Reaching the intended audience requires coherence within ERS and across national societies.

**Conclusion**

Spirometry practitioners have the opportunity to take ownership to improve and measure their knowledge and practice of spirometry, emphasising commitment to education and value of attaining a European qualification. For the first time, harmonisation of training in spirometry offers an objective process for evaluation within Europe. With a training programme outline and
guidelines for certification of ERS training programmes now in place, the Task Force looks to putting theory into practice with a real focus on application. To facilitate a training model, the next project steps intend to design and utilise educational materials, online modules and assessment criteria aligned to concrete standards set out by the Task Force, further strengthening the value of the spirometry HERMES project.

The significance and impact of spirometry as a measure of global health and a predictor of morbidity and mortality resonate throughout the literature [16], and presuppose that spirometry testing receive priority within the medical arena. Yet evidence of a substantial lack of training and inconsistencies in standards across many European countries, there is most certainly scope to improve spirometry practice and reinforce quality patient care. At the core of this impending challenge, the Spirometry HERMES initiative attempts to produce consensus-based documents and guidelines fundamental to the delivery of best practices in spirometry training. It is hoped that project potential will be realised, establishing coherence across national societies, ERS members and all practitioners of spirometry. Building on the shoulders of the previous HERMES projects, with confidence the Spirometry HERMES Task Force takes the first step towards attaining their final mission: delivery of the best possible training to certify spirometry practitioners and improving quality health care for respiratory disease patients.

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References

11. Instructional Methods and the Clinical Learning Setting: An educational guide for the implementation of the Paediatric HERMES curriculum. JO Busari, et al. in press. 2010 This document is a work in progress and should not be referenced unless and until it is approved and published. Until such time as this Editor’s Note is removed, the inclusion of the above document is for informational purposes only.