

Allied respiratory professionals

Introduction



Key points

- Allied health professionals (physiotherapists, technologists/scientists, nurses, psychologists, occupational therapists, nutritionists) are involved in the prevention, diagnosis, evaluation, treatment and management of acute and chronic respiratory diseases.
- Respiratory technologists are involved with the development, clinical application and monitoring of new diagnostic and therapeutic procedures.
- Respiratory physiotherapists have expanded their traditional roles such as sputum clearance techniques to areas including pulmonary rehabilitation and supervision of noninvasive ventilation.
- Respiratory nurses are engaged in the holistic care of patients with lung diseases and are often involved in preventive programmes.
- There is considerable overlap between the responsibilities of allied respiratory professionals and, depending on local circumstances, similar roles may be played by respiratory technologists, physiotherapists or specialist nurses.

In recent decades, the management of patients with acute and chronic conditions has become multidisciplinary. Essential elements of respiratory patient management are now carried out by healthcare professionals such as physiotherapists, technologists/scientists, nurses, psychologists, occupational therapists, nutritionists, *etc.* Allied respiratory professionals (ARPs) are involved in the prevention, diagnosis, evaluation, treatment and management of acute and chronic respiratory diseases.

Physiological diagnostics have become a cornerstone of the classification of many diseases (chronic obstructive pulmonary disease (COPD), asthma, interstitial lung diseases, obstructive sleep apnoea syndrome, *etc.*), and spirometry (lung function testing) is now increasingly used by ARPs in many areas as a basic screening test to establish the appropriate therapeutic pathway. The measurement of lung function, arterial blood gases and oximetry, as well as the assessment of physical fitness or adherence to the agreed treatment, have also become important in determining the appropriate patient pathway. These tests, and many others, are now widely used to support the physician and the respiratory team.

ARPs are particularly involved in the rehabilitation of patients with chronic respiratory conditions, and are often the patient's first point of contact. In recent years, there has been increasing evidence for ARP-led interventions, serving to strengthen their

“ *Comprehensive care plans for older people with chronic respiratory diseases need to include training for respiratory nurse specialists in hospitals and the community* ”

professional and academic role in disease management programmes. Consequently, the education and transfer of knowledge between different professional groups has become increasingly important in order to ensure that evidence-based research is translated into clinical practice.

This chapter will discuss the different professional positions within the ARP field, outlining the roles and responsibilities of each, and the areas requiring future development.

Respiratory technologists and clinical scientists

Respiratory technologists and clinical scientists perform lung function tests and study respiratory physiology and pathophysiology. They are concerned with the development, clinical application and monitoring of new diagnostic and therapeutic procedures in respiratory medicine. Respiratory technologists perform investigations in patients at rest as well as during exercise, by measuring lung volumes, airflow, gas transport across the alveolar membrane and blood oxygenation. They are also responsible for the calibration, maintenance and quality control of equipment.

Respiratory technologists perform sleep studies and sometimes run therapy services for patients with asthma, COPD and fibrotic lung disorders. The sleep medicine field has seen significant growth in recent years due to the high prevalence of sleep breathing disorders and growing public awareness of these conditions. Sleep medicine is a multidisciplinary specialty, in which ARPs such as technologists, scientists and nurse specialists play a key role. Many technologists are directly involved in performing and scoring sleep studies (figure 1) according to established guidelines. Their role involves providing patient education and developing treatment plans based on patients' needs. Good patient education and training is vital; the success of continuous positive airway pressure (CPAP) treatment, for example, is directly related to patient education.

Respiratory technologists and clinical scientists participate in activities that help raise awareness about the causes and prevention of pulmonary diseases. They support the development and promotion of smoking cessation programmes, pulmonary function screening, air pollution monitoring, allergy warnings, and other public education programmes.

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Figure 1 – Scoring a sleep study.

Training

It is difficult to accurately determine the training and education level of respiratory technologists and clinical scientists in Europe, due to a lack of data. The content and duration of their education differs greatly between countries, and consequently the harmonisation and standardisation of education and training is an ongoing challenge.

As part of its HERMES (Harmonised Education in Respiratory Medicine for European Specialists; hermes.ersnet.org) project, the European Respiratory Society (ERS) has set up a task force to establish a European spirometry certification programme, the European Spirometry Driving Licence. The task force aims to provide a platform that consolidates basic spirometry knowledge with more in-depth postgraduate education in respiratory physiology (figure 2). In time, this should lead to the development of a pan-European spirometry qualification, which standardises measurement quality and reliability throughout the continent. This goal is outlined in the European Respiratory Roadmap.

The professional field of respiratory technology and clinical science should aim to:

- improve the supply of scientific and technology personnel so that an adequate number of professional staff is available to deliver a high-quality scientific service
- strengthen and modernise education and training through use of the HERMES project framework
- develop an infrastructure with an attractive career pathway, so that high-quality staff are recruited and retained

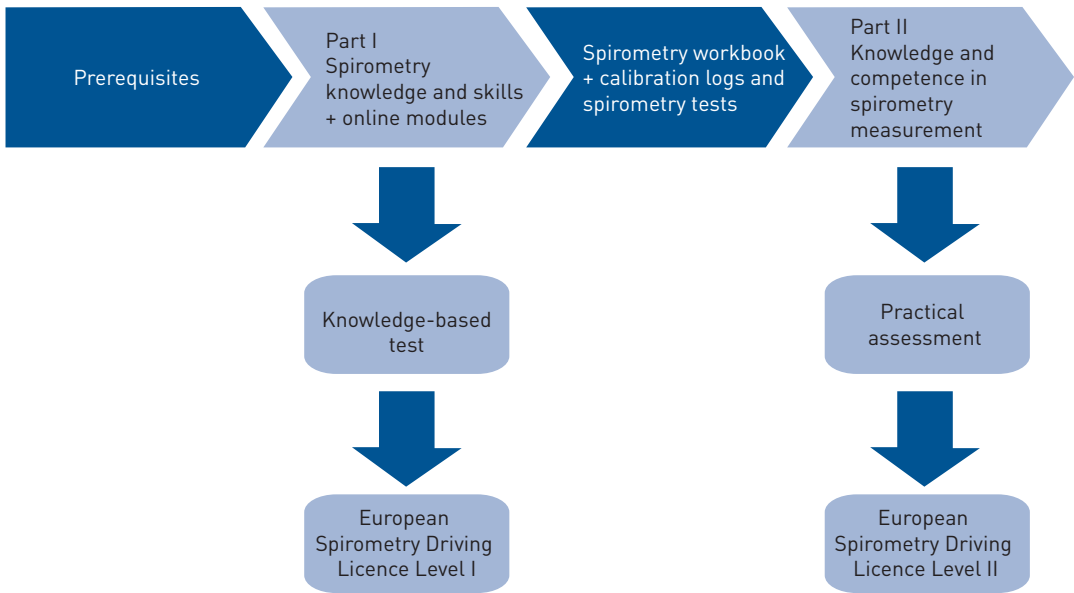


Figure 2 – The European Spirometry Training Programme.

- ensure the contribution of respiratory technologists and clinical scientists is fully recognised within the ERS

A thorough modernisation of education and training in this area is also required, in order to provide:

- more interprofessional education and training
- joint training in communication skills
- common learning programmes that are based on core skills, to enable students to switch careers and training paths more easily
- continuing professional development and lifelong learning
- a learning environment that supports evidence-based practice
- augmentation of existing professional education and training programmes, and regulatory standards

The creation of a curriculum for respiratory technologists and clinical scientists requires:

- modular courses designed to enhance interprofessional learning
- flexible delivery accessible to students from diverse backgrounds
- a focus on competence, with skills training mapped to international standards
- education that promotes problem identification, problem solving and critical thinking

As with other health professionals, the right balance between the development of practical skills and academic knowledge needs to be achieved. Vocational training must be undertaken predominantly within the hospital environment due to the need for access both to patients and sophisticated equipment.

Respiratory physiotherapists

Physiotherapy (or physical therapy) is primarily concerned with developing, maintaining and restoring an individual's maximum movement and functional ability. It includes examination/assessment, evaluation, diagnosis, prognosis/planning of treatment, intervention/treatment, and re-examination. The conceptual framework most frequently used by physiotherapists is the international classification of function; the main goal of this classification is to enhance the patient's participation in everyday life. In patients with respiratory conditions, physiotherapy includes, but is not limited to, chest physiotherapy or clearance of secretions, and breathing exercises. In recent years, the evidence base for the use of physiotherapy in the form of exercise training has grown in many areas, ranging from intensive care to chronic respiratory conditions (see chapter 29).

Physiotherapy services can be used at all ages and at all stages of disease, from early diagnosis, through chronic illness, to acute episodes and care at the terminal stage. As such, physiotherapists have a clear and specific role in most clinical care pathways. The physiotherapist's role in patient care includes assessment, advice, education and hands-on intervention. Traditionally, respiratory physiotherapists aid the mobilisation and removal of secretions. However, this is only one of the many problems physiotherapists can address. They aim to:

- maintain or improve exercise tolerance
- improve functional abilities (*i.e.* carrying out daily tasks)
- maintain and improve physical activity, coaching patients toward improving healthy behaviour
- reduce breathlessness and the work of breathing
- improve the efficiency of ventilation
- support weaning from mechanical ventilation and set up noninvasive mechanical ventilation
- mobilise and aid the expectoration of secretions (coughing up of mucus)
- improve knowledge and understanding
- reduce (thoracic) pain

Physiotherapists who specialise in treating patients with respiratory disease have a background in respiratory physiology, exercise and muscle physiology, exercise training, and the principles of behaviour change. Further subspecialisation may include particular expertise in mechanical ventilation, aerosol delivery and pulmonary rehabilitation.

A physiotherapist should achieve the above aims with the goal of evidence-based practice in mind, *i.e.* they should know

the most effective intervention, based on the evidence, and integrate this knowledge and its application with clinical judgment and patient preference. Recently, evidence-based treatment guidelines have summarised and endorsed the role of physiotherapy in the treatment of patients with respiratory conditions. A patient's contact with their physiotherapist is often frequent and of a relatively long duration. This means the physiotherapist is ideally placed to help relieve anxiety, boost confidence and deliver appropriate information or advice.

Physiotherapy typically commences with a comprehensive assessment of the patient's respiratory function, breathing pattern, respiratory muscle function and exercise capacity. Assessment of skeletal muscle function is particularly important, as this forms a major barrier to normal functioning in many respiratory patients. Based on this information, an evidence-based therapy plan is developed.

Physiotherapists often use mechanical devices, such as intermittent positive-pressure and CPAP equipment; tools that have been used in the profession since the mid-20th century. With the resurgence of interest in, and greater sophistication of, noninvasive ventilation techniques, physiotherapists have a greater armoury to turn to. Many individuals with life-threatening respiratory failure can be successfully managed in this way, avoiding intubation. Similarly, carefully selected devices can assist in mucus clearance. Exercise equipment has long been used in pulmonary rehabilitation programmes; however, physiotherapists may also use supplementary oxygen, noninvasive mechanical ventilation, complex training modalities or neuromuscular electrical stimulation to enhance the effectiveness of exercise training in respiratory patients. One specialised technique in particular is specific inspiratory muscle training using resistive breathing, which is used to alleviate breathlessness in patients with inspiratory muscle weakness.

Physiotherapists are important clinical team members in intensive care units, respiratory wards, outpatient clinics and palliative care services. The role of physiotherapists is widening as health services place a greater emphasis on chronic disease management and the maintenance of patient independence and function: where appropriate, patients are increasingly managed in the primary care setting, with the advent of domiciliary and hospital-at-home services.

Like their colleagues in other professions, physiotherapists should have greater involvement in tackling unhealthy behaviour (smoking, inactivity) in all aspects of healthcare. Ensuring that these skills are acquired is an important educational aim in the years to come.

Training

Like nurses, respiratory physiotherapists are often nonspecialised. However, in many European countries, increasing numbers specialise in respiratory physiotherapy and rehabilitation. The ERS has encouraged such specialisation by launching the HERMES respiratory physiotherapy programme, which aims to provide a standardised postgraduate programme of education and training. In a survey conducted to support this initiative, 64% of 107 respondents from over 30 countries reported that physiotherapy training is organised as an academic training programme in their country; 43% of these respondents reported that undergraduate training takes 3 years to complete and 32% reported that training modules are spread over 4 years.

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Although much of the care that respiratory patients receive at a primary, secondary and tertiary level is provided by nonspecialised nurses, patients in many European countries are seen and managed by respiratory nurse specialists. Respiratory nurses are engaged in the holistic care of patients with lung diseases, with the aim of maintaining the highest nursing standards, while working in collaboration with other members of a healthcare team. Specialist nurses work in various settings (inpatient and outpatient hospital departments and patients' homes) and, in addition to providing patient care, they are often involved in preventive programmes (e.g. smoking cessation and patient education).

Role

Respiratory nurses are sometimes involved in the development, clinical application and monitoring of new diagnostic and therapeutic procedures. They participate in research that aims to improve health and prevent disease, and collaborate in investigations involving patients with lung disease. Respiratory nurses are involved in almost all care programmes for patients with respiratory diseases including pulmonary hypertension, asthma, COPD, tuberculosis, transplantation, respiratory oncology, sleep disorders, and cystic fibrosis; they play a crucial and specific role in the care, education and self-management of patients within such programmes. In each care programme, they also have specific tasks: they monitor and treat patients, and ensure that patients adhere to the agreed therapy. As care moves away from the classical 'clinic' setting, respiratory nurses are also becoming active in the primary care of patients with COPD and asthma. This shift should be accompanied by proper education in the management of respiratory patients.

Respiratory nurses have an important role in patient education, the enhancement of patient self-management and the management of care. For more than 20 years, the British Thoracic Society (BTS) has recommended that respiratory nurse specialists should be attached to all respiratory medicine departments to act as a link between the hospital and the community. Several studies have examined the role of respiratory nurse specialists. It has been shown that they are effective in guiding self-management in asthma patients, and in coordinating an integrated care pathway focusing on identification, early intervention and management in COPD, including supervision of early hospital discharge and long-term care. An Australian study has shown the beneficial effects of domiciliary respiratory nurse intervention in the care of COPD

patients: although mortality was unchanged, involvement of an outreach respiratory nurse as part of a shared-care approach resulted in improved health-related quality of life.

A programme in Kilkenny, Ireland has identified that comprehensive care plans for older people with chronic respiratory diseases need to include training for respiratory nurse specialists in hospitals and the community to address the following areas of patient care:

- use of long-term oxygen
- accurate diagnosis
- appropriate use of medication
- monitoring of treatment efficacy
- community/hospital rehabilitation programmes, where appropriate
- smoking cessation
- multidisciplinary assessment and intervention
- recognition of early warning signs of an exacerbation with rapid access to appropriate services

Similar programmes exist in Spain and are predominantly led by respiratory nurses. A recent meta-analysis has highlighted the effectiveness of nurse-led programmes and has particularly shown the effects on health-related quality of life.

In patients with complex therapeutic schemes (e.g. patients suffering from pulmonary hypertension, those on long-term oxygen therapy and those receiving noninvasive mechanical ventilation), specifically trained nurses are key to ensuring quality care. More and more tele-health applications are used and overseen by respiratory nurses, allowing for remote monitoring and the adjustment of therapy.

An increasingly important element of the specialist respiratory nurse's role is to act as a clinical study nurse and coordinator. As respiratory nurses excel in providing patients with information at patients' level of understanding, and are trained in patient interview skills and the techniques relevant to respiratory research, they often run clinical trial units and help engage patients in clinical trials.

Respiratory nursing websites (see box) describe the respiratory nurse's role as promoting pulmonary health in individuals, families and communities, and caring for those with pulmonary dysfunction throughout their lifespan. Respiratory nursing care is preventive, acute or critical, and rehabilitative. A respiratory nurse may be employed as a staff nurse, clinical nurse specialist, nurse practitioner, nurse manager, supervisor, coordinator, director, executive, nurse educator, or research nurse; they are employed by hospitals, extended care centres, private companies, health departments, office practices and clinics. The Standards of Nursing Care for Adult Patients with Pulmonary Dysfunction developed by the Nursing Assembly of the American Thoracic Society (ATS) in 1989 offers a detailed guide to respiratory nursing clinical care.

Respiratory nursing websites

Nurse.com - www.nurse.com

Respiratory Nursing Society - www.respiratorynursingsociety.org

Association of Respiratory Nurse Specialists - www.arns.co.uk

European Respiratory Society Nurses Group - <http://www.ersnet.org/assemblies/allied-respiratory-professionals/item/146-nurses.html>

American Thoracic Society Nursing Assembly - www.thoracic.org/assemblies/nur/index.php

Training

Professional societies at a regional level have a key role to play in training and education. Much of the nursing care that respiratory patients receive is provided by professionally trained nurses. In many disease areas, however, there is a need for specifically trained nurses with a Masters-level degree or similar. Postgraduate education may allow respiratory nurses the opportunity to train to become leaders of care programmes. Within the ERS, the Nurses Group (part of the Allied Respiratory Professionals Assembly) ensures such training at a European level. Similarly, the ATS has a dedicated Nursing Assembly. Its mission statement summarises the aim of respiratory nurses as follows: 1) to prevent disease and disability in respiratory, critical care and sleep-related conditions; 2) to improve the management of symptoms resulting from these conditions; and 3) to enhance end-of-life and palliative care. The Assembly has also composed a formal list of research priorities for respiratory nurses.

Further reading



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Scientists/technologists

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