

ERS STATEMENT

Pulmonary medicine and (adult) critical care medicine in Europe

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There has been growing concern within the European Respiratory Society (ERS) that pulmonary physicians are becoming less involved in the practise of intensive care medicine (ICM). A Working Party (WP) was therefore established to identify issues that might explain this trend. No precise terms of reference were issued to guide this exercise. The WP ensured that its report focussed on improving patient care. With this proviso, the WP aimed to: 1) briefly identify the current working practices of pulmonary physicians practicing ICM in six European Union (EU) countries (France, Germany, Greece, Italy, Spain and UK); 2) discuss possible opportunities to expand the influence of pulmonary physicians in the provision of acute care; and 3) determine the implications of 1) for training programmes.

Methodology

The following methods were employed. 1) Relevant literature was extracted and a draft report concerning the three points discussed previously was prepared and circulated to the members of the WP. 2) A 1-day meeting was held in Paris on March 26th, 2001, and the contents of the draft report discussed and refined. 3) A second draft was prepared and circulated. 4) A final report was forwarded to the executives of the ERS.

Development of intensive care medicine

In Europe, ICM is one of the most recent clinical disciplines to evolve. The polio epidemic in Denmark in 1952 showed that careful airway management with the application of positive pressure ventilation could dramatically reduce mortality in patients who presented with paralysis of the respiratory muscles. This focus on airway care and ventilatory management encouraged anaesthesiologists to lead the way in the introduction of critical care facilities. Technological advances in the 1960s led to the development of sophisticated physiological monitoring equipment. The subsequent recognition that the diagnosis and management of critical illness required additional skills to those incorporated into training in anaesthesiology, attracted clinicians trained in general internal medicine into the intensive care unit (ICU). Moreover, the early dominance of respiratory failure in precipitating ICU admission meant that pulmonary physicians,

particularly in the USA, were frequently involved in the care of patients. ICM is now an established discipline with journals and training programmes and is an expanding research base [1, 2] devoted to its practise. In addition, ICM is now a recognized specialty in two EU member states, Spain and the UK.

Current practise of critical care medicine in the USA

In the USA, critical care medicine (CCM) has evolved to achieve specialty status in a variety of ways. In the 1970s, the four interested primary specialist boards (Anaesthesiology, Internal Medicine, Paediatrics and Surgery) made efforts to formalize training and certification processes in CCM. In 1980, they were asked to form a joint committee based upon the principle that CCM should evolve as a multidisciplinary endeavour crossing traditional departmental and speciality lines. Unfortunately, disagreements arose concerning the development of a common certification examination for candidates from diverse clinical backgrounds and the committee was dissolved in 1983. Individual primary speciality boards subsequently developed their own individual certification processes. Within Internal Medicine, a variety of means of achieving speciality or subspeciality recognition have also emerged.

The involvement of pulmonary medicine in the practise of CCM has grown progressively over the past 3 decades. Today, most applicants for fellowship programmes seek dual accreditation in pulmonary and CCM. Directors of pulmonary divisions and fellowship programmes recognize that their survival and growth is linked inextricably to CCM. Further, the American Thoracic Society (ATS) expanded its mission statement to include CCM and changed the name of its journal to the American Journal of Respiratory and Critical Care Medicine in 1994 [3]. In 1995, an official statement of the ATS Board of Directors pointed out that for optimal delivery of healthcare the pulmonary and critical care physician will "provide principal care for all patients in (medical) ICUs".

Respiratory intensive care in Europe

In Europe, pulmonary physicians have been increasingly involved in the provision of high dependency

care, particularly that involving the provision of noninvasive ventilatory support. The effectiveness of such intermediate dependency areas has been demonstrated in both clinical and economical terms. Thus, patients with chronic and acute on chronic pulmonary insufficiency and those requiring prolonged mechanical ventilatory support can be managed effectively outside the general ICU and at a lower cost [4, 5]. Consequently, there has recently been a rapid increase in the number of respiratory intensive care units (RICUs) [6]. Although such facilities support patients with single organ (i.e. pulmonary) failure, providing an intermediate level of care between the general ward and the ICU, their characteristics vary widely.

In Italy, such units have a nurse:patient ratio of $\geq 1:4$, physician availability 24 h·day⁻¹ and offer continuous noninvasive monitoring and expertise in administering noninvasive ventilation (NIV) and endotracheal intubation in the event of failure [7]. In contrast, Spain has only one RICU [8].

Although intensivists with pulmonary medicine as their base specialty are involved in the provision of general intensive care services in Europe, particularly in certain areas of clinical practice, such as following lung transplantation or lung volume reduction surgery, data concerning their precise numbers are unavailable.

Current practise of intensive care medicine in Europe

Historically, the situation in Europe is complex. In some countries (e.g. Scandinavia, UK), anaesthesiology has dominated ICM from its birth, whereas in others (e.g. the Netherlands), the picture is changing. ICM can only be practised legally by anaesthesiologists in Italy. ICM has "stand-alone" speciality recognition in Spain and the UK (from 2000).

As of March 2001, of the 2,332 members of the European Society of Intensive Care Medicine (ESICM), 50.6% counted anaesthesiology as their primary speciality and 20.9% internal medicine. Approximately 53% of Society members spend 100% of their time practising ICM; 24% spend 50–75% of their time thus occupied. It is unclear whether these figures are gradually changing due to the relatively short time the Society has been founded. Nevertheless, the emergence of ICM as a multidisciplinary speciality is one of the bases upon which the ESICM is founded.

Other organizations within Europe also contain subgroups of individuals concerned with adult ICM. These include the ERS and the European Academy of Anaesthesiology. The specialist committee of the Union European d' Medicine Specialists (UEMS) is also likely to play a key role in determining the emergence of ICM as a speciality. Involvement of the interested parties (surgical, anaesthesia, internal medicine/pulmonology) in this essentially political process is thereby likely to determine the ease with which individuals from different base specialities obtain training in the new discipline.

Training in ICM (where available) is of variable length and is open to clinicians of differing base specialities. In Spain, 5 yrs' training is required to

achieve specialist status, 3 yrs of which is in ICM. In France, Germany, Greece and the UK, 2 yrs' training in ICM is required in addition to that needed for base specialty (usually anaesthesiology, pulmonology or general internal medicine). In Italy, only anaesthesiologists may legally practise ICM.

There is considerable variation between member states of the EU regarding the amount of exposure to ICM currently incorporated into the training of pulmonary physicians as a mandatory (M) or optional (O) requirement. France: 6 months (O); Greece: 6 months as part of anaesthesiology and respiratory medicine (M) or 3 months as part of internal medicine (M); Germany: 6 months (M, as part of general internal medicine); UK: 3 months (O); Italy and Spain: none.

Effect of training in intensive care medicine on clinical outcome

Certain assumptions can be made concerning advances in the organization of intensive care that impact directly upon the terms of reference of this WP. 1) Clinical outcome is known to be improved by the conversion of so-called "open" ICUs to closed facilities in which patients are managed exclusively by individuals trained in ICM [9, 10]. 2) A number of Societies, including the ESICM, are in the process of publishing recommendations concerning the content and duration of training programmes in ICM [11]. The ESICM is also producing a comprehensive, problem-based learning package and, through written and clinical examination, has been awarding diplomas for the past 10 yrs. Training guidelines have also emerged from the American College of Critical Care Medicine and the Society of Critical Care Medicine (USA) [12]. 3) Superior organizational practices related to patient-centred culture, strong medical and nursing leadership with effective communication and co-ordination, and open collaborative approaches to problem solving and managing conflict can improve outcome in intensive care [13]. 4) Finally, in the USA, the percentage of internal medical graduates attempting to achieve certification from the American Board of Internal Medicine in CCM is gradually increasing. Examination performance is positively associated with formal training, internal medicine examination performance, recent medical training and pulmonary disease certification [14].

Evolving role of intensive care medicine outside the intensive care unit

Recently, organizational advances in practising ICM have been paralleled by an expanding clinical role. In certain countries, WPs have been established to consider ICM outside the ICU [15]. This is particularly relevant given changing patient demographics, as ambulatory care is increasingly likely to be provided in community-based facilities, in which routine surgery and care relating to chronic conditions (e.g. diabetes) may also be largely based. The implications of this are that hospitals will increasingly

deal with the acutely ill patient only, and the training of staff and provision of facilities will need to be adjusted accordingly. To this end, it may be useful to consider reclassifying patients by the extent of their dependency as follows. Level 0: patients whose needs can be met through normal ward care. Level 1: patients at risk of deterioration in their condition and those recently relocated from higher levels of care whose needs can be met on an acute ward with additional advice and support from the critical care team. Level 2: patients requiring more detailed observation, including support for a single failing organ system or postoperative care, and those "stepping down" from higher levels of care. Level 3: patients requiring advanced respiratory support alone or basic respiratory support together with support of at least two organ systems. This level includes all complex patients requiring support for multiorgan failure.

In addition, an increasing number of external influences upon the performance of critical care are being recognized. 1) The nature and timing of referrals to ICU partly dictate outcome. In particular, a higher rate of attributable mortality has been documented in patients who are refused intensive care, especially on an emergency basis [16]. Moreover, the time at which patients are discharged from intensive care may also impact upon outcome [17]. 2) The increasing need for intermediate care, high dependency or step-down facilities emphasizes the growing gap between clinical care practised in the open wards and patient requirements. 3) Temporal changes in patient characteristics and nursing workload are now thought to impact upon outcome [18]. 4) Early identification of patients at risk of death both before admission and after discharge from ICU may decrease mortality [19]. 5) Patients who are likely to need a shorter duration of admission to ICU or who have a low risk of mortality, but may benefit from high-dependency care, can now be identified [20]. 6) The impact of specialist retrieval teams in moving patients from the ICU may also be relevant [21]. 7) Long-term follow-up of the critically ill as outpatients following hospital discharge may identify problems of chronic ill health that require active management and physical/mental rehabilitation.

In summary, there is clearly an increasing need for clinicians with acute care skills to assist in managing the (increasing numbers of) patients with Level 1–2 dependency. Preliminary evidence suggests that targeting increased resources at this group of patients is likely to improve outcome and simultaneously relieve pressure on Level 3 (conventional ICU) facilities.

Involvement of the pulmonary physician in the care of patients with Level 1–3 dependency: advantages to the patient

When making direct comparisons between individuals from different base specialties training in CCM, a number of issues favour the involvement of those from pulmonary medicine. 1) The majority of patients admitted to ICUs, at least in Europe, require mechanical ventilatory support. Thus, patients with lung

failure represent the largest single group of those requiring admission to the ICU. 2) Pulmonary physicians in Germany, Greece, France and the UK are also trained in general internal medicine. Others have shown that such training is valuable for practising CCM. Indeed, CCM may represent the last bastion of acute general medicine. 3) Assuming the "closed" model of intensive care is appropriate, training in internal medicine is likely to provide exposure to the wide range of conditions requiring diagnosis and management in the critically ill. 4) Pulmonary physicians in particular have access to knowledge (e.g. pulmonary physiology) and diagnostic tools (e.g. fiberoptic bronchoscopy) that are especially relevant to clinical practise in ICM. The publication of the American European Consensus on the use of non-invasive respiratory support (NIV) in acute medicine has also provided a considerable boost to interest in the application of the technique in the intensive care setting. 5) Pulmonary physicians are used to working in the ward environment. They are likely, therefore, to adapt to the needs of the Level 1–2 patient cared for within this environment, relatively easily. Moreover, they have immediate access to ward facilities in which patients discharged from Level 3 facilities may be accommodated. 6) Pulmonary physicians have access to outpatient facilities in which to follow-up Level 1–3 patients following hospital discharge. 7) Pulmonary physicians frequently have access to large departmental staffing structures to support "rotation" between ICM and non-ICM duties. 8) The research base in pulmonary medicine is particularly strong in some countries.

The pulmonary physician in intensive care: practical difficulties

A number of problems may be encountered by the ERS when encouraging individuals with a pulmonary medical background to enter careers involving ICM in Europe. 1) The established political processes for the development of ICM within the EU do not include pulmonary medicine. 2) The leading Society in this area is the ESICM, which focuses on a multidisciplinary approach to ICM. Whilst this does not disadvantage the pulmonary physician, the ESICM is equally unlikely to facilitate the training of pulmonary physicians in general intensive care at the expense of other base specialties. 3) A minimum training requirement of 2 yrs in addition to base specialty is required in most EU countries. Access to such training schemes for junior clinical staff may be difficult or impossible. 4) In certain countries (e.g. Spain) ICM represents a separate, stand-alone specialty; dual training with pulmonary medicine is not relevant. In others (Italy) pulmonary physicians are legally prohibited from practising ICM. 5) There is a lack of information about the current provision of units providing care for patients with Level 1–2 dependency delivered by pulmonary physicians. A recent survey (A. Torres, personal communication) suggested that such facilities are in existence in Italy, Germany, France, the UK and Spain (plus Austria

and Turkey). However, these vary in terms of physical location and adjacencies (e.g. ward-based, ICU-based), the type of interventions and monitoring provided, and the patient population accepted.

The way forward

There are a number of approaches that may enable the pulmonary physician to become a significant provider of CCM in the future of ICM in Europe. 1) Recognition that clinical practice involving the care of Level 3 dependent patients will require training for a minimum of 2 yrs outside the pulmonary programme. This level of commitment may be relatively rare in those who also want to practise "mainstream" pulmonary medicine, although the WP felt this may change as hospital practice evolves in the coming years and many more patients with chronic pulmonary disability are cared for exclusively in the community. 2) The advantages of the "multi-disciplinary" nature of ICM are recognized by the ESICM, but practitioners working substantially in the Level-3 setting are likely to ally themselves professionally with the intensive care community rather than pulmonary physicians. 3) The development of facilities designed specifically for the care of Level 1–2 dependent patients (*i.e.* "bridging" the existing clinical arenas encompassed by the emergency room and ICU) is a task that pulmonary physicians are, with appropriate training, well qualified to undertake. The spectrum of patients likely to fall into this category is wide and almost certain to include those with acute, chronic and acute on chronic respiratory insufficiency. 4) Greater involvement in the pre-operative assessment of patients with medical problems and in that relating to specific postoperative

populations (those undergoing thoracic surgery) is highly desirable. 5) Participation in teaching medical students and in research programmes designed to further knowledge about the diseases of the critically ill should be encouraged.

Summary and recommendations

The Working Party believes that pulmonary physicians should involve themselves in the provision of intensive care on two broad levels. First, a number of trainees should undertake a 2-yr programme of training and spend the majority of their professional career working in Level-3 facilities. Although such individuals should be regarded as intensivists, their training in pulmonary medicine is also likely to facilitate patient care. Secondly, pulmonary trainees should play an increasing role in the management of patients with dependency Levels 1 and 2, where their existing skills, complemented by new training (see below) and the wider implementation of noninvasive ventilation, are likely to be particularly relevant. The use of this technique to facilitate weaning and to support patients either with chronic respiratory disability, or acute but irreversible disease may help to relieve clinical pressure on Level-3 facilities. To achieve these ends the Working Party makes the following recommendations. 1) Trainees in pulmonary medicine should spend a minimum period of 6 months training in a Level-3 facility, attaining educational goals specific to their needs [22]. 2) Open access to 2-yr training programmes leading specifically to a substantially "whole-time" career in intensive care medicine must be provided. Recognition that "burn out" may occur in the trainee's later professional life should ensure that skills in general pulmonary medicine are

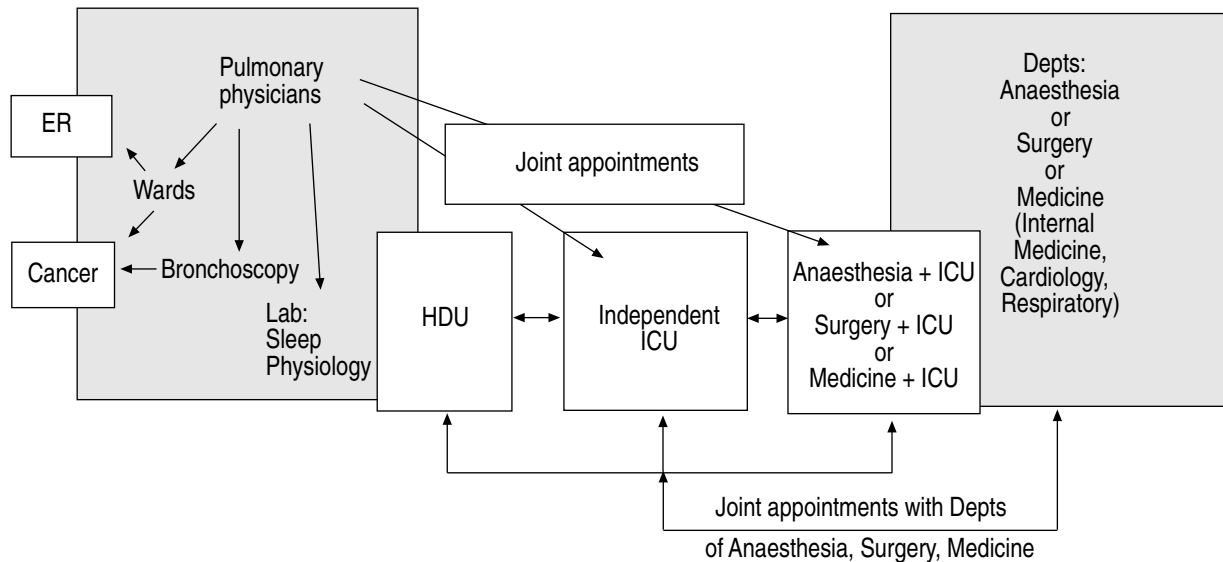


Fig. 1. –Schematic representation regarding the possible interaction of pulmonary and intensive care medicine. The potential role of each dept is shown. The intensive care unit (ICU) may be an independent entity, but could be staffed by clinicians with joint appointments across the Depts of Medicine, Surgery or Anaesthesia. The Dept of Respiratory Medicine could also manage a high-dependency unit (HDU) in which patients requiring noninvasive ventilatory support could be managed, thereby preventing ICU admission, or could assist in ICU discharge. ER: emergency room.

sustained. To this end, the clinician should feel part of a larger department without the confines of the intensive care unit from which professional support may be obtained (fig. 1). 3) All trainees in pulmonary medicine must undertake a minimum period of 6 months training in the care of patients needing Level-1 and -2 care. This must involve exposure to the use of noninvasive ventilation in the acute care setting. Respiratory units that require training recognition will be needed in order to establish facilities for the care of such patients by the end of 2003. 4) The specific groups of patients to be cared for in these facilities and their dependency must be identified. Staffing levels, equipment and preferred physical location must be defined based upon the best evidence available to date. 5) The European Respiratory Society should approach the European Society of Intensive Care Medicine to develop a collaborative approach to the training and integration of pulmonary physicians into the critical care setting, as well as a unified approach to the Union European d' Medicine Specialists.

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