

Respiratory Intermediate Care Units

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Critical care medicine in the United States emerged from the combined activities of 4 specialties: anesthesiology, internal medicine, pediatrics, and surgery.¹ Later, respiratory medicine began to play a strong role. The importance of respiratory medicine in critical care has grown in the United States to the point where many respiratory medicine training programs offer accreditation in both pneumology and critical care medicine.¹ The situation of critical care medicine in European countries is much more complex.¹ Here, particularly in Spain, this specialty has developed without the involvement of respiratory medicine. In the Scandinavian countries and the United Kingdom, anesthesiologists have been leaders in critical care medicine from the outset, yet in Italy, it can be practiced “legally” only by anesthesiologists and in Spain (and in the United Kingdom since 2000) it is recognized as a specialty in its own right. As early as 2002, the European Respiratory Society (ERS), made reference to obstacles that stood in the way of greater involvement in critical care on the part of respiratory medicine specialists in Europe.¹

A typical pneumology unit in Spain includes a hospital ward, a respiratory endoscopy unit, a lung function laboratory, a sleep unit, and, in some cases, specialized clinics (smoking cessation, pulmonary hypertension, tuberculosis, etc). With few exceptions, however, it does not include units for the treatment of critical respiratory patients. This situation is now beginning to change. The ongoing development of noninvasive ventilation (NIV) has led to increased interest in and use of this technique on the part of our specialists. This has led to our management of care for more complex patients, and this in turn has generated needs that heretofore had been limited to the critical care setting. As a result, pneumology departments in many European countries, including Spain, have begun to incorporate specialized units for monitoring patients with severe disease who require NIV: respiratory intermediate care (or high dependency) units (RICUs). A key argument in favor of RICUs is based on the observation that many patients admitted to conventional

intensive care units (ICUs) neither require nor benefit from the large staff or close monitoring that such units provide. Nevertheless, such patients could not be adequately managed on a conventional hospital ward either, and RICUs would therefore be the best place to treat them. According to a European Respiratory Society task force, there were 42 RICUs in Europe as of 2002, and of those, 28 were in Italy and Germany (13 and 15, respectively) and only 1 in Spain.² The same task force described 3 levels of care for patients with severe respiratory diseases: the highest level comprised respiratory ICUs; the second highest, the intermediate units, or RICUs; and the lowest level, respiratory monitoring units. In Spain there was only 1 respiratory ICU at the time and the establishment of critical care medicine as a specific specialty makes it unlikely that more will be set up in the short or medium term.

The Working Group on Intermediate Respiratory Care of the Spanish Society of Pulmonary and Thoracic Surgery (SEPAR) defines the RICU as an area for monitoring and treating patients with acute or exacerbated chronic respiratory failure caused primarily by a respiratory disease.³ According to this working group, the objectives of such units are *a*) cardiorespiratory monitoring or treatment of respiratory failure with NIV; *b*) continuous monitoring of patients following thoracic surgery and of tracheostomized patients; and *c*) treatment of critical patients whose weaning from invasive ventilation is difficult. The “ideal” RICU will have to be adjusted to the needs and peculiarities of the particular health care facilities and pneumology departments that create them. It will also need to have specialized nurses and, if possible, physical therapists who are available around the clock, have had experience in applying NIV, and have had sufficient training so that they can apply emergency techniques such as tracheal intubation successfully.⁴

RICUs should also contribute to improved cooperation and coordination with other hospital departments. An advantage of a RICU over a conventional ward is that it allows for continuous noninvasive monitoring at a lower nurse-to-patient ratio per shift (1:3 or 1:4).³ Such care can help to reduce the NIV failure rate. An advantage of a RICU over an ICU is that the intermediate unit can make it possible to avoid unnecessary ICU admissions (thus reducing costs and complications derived from such care) and to deal more effectively with patients who are highly dependent on nursing or rehabilitation care or those who require closer monitoring of a noninvasive nature.³ RICUs

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can also make it easier to deal with patients with severe respiratory disease who, under other circumstances and in the absence of ICU beds, would remain in the emergency department and thus contribute to overloading there.

NIV is the principal reason for setting up RICUs.³ The treatment of acute or exacerbated chronic respiratory failure in chronic obstructive pulmonary disease (COPD) is by far the most frequent indication for NIV. It is generally accepted that NIV in COPD exacerbations should be applied in the appropriate surroundings, mainly in ICUs.⁵ However, in patients with less severe disease (with an arterial pH upon admission between 7.30 and 7.35), NIV can be applied on the ward, although this would increase the workload for the nursing staff.⁶ Recent COPD guidelines drawn up by SEPAR and the Latin American Thoracic Society (ALAT) suggest that patients with an arterial pH between 7.25 and 7.30 who do not require immediate intubation can be treated in specialized units with an adequate level of supervision (RICUs), although for the moment there is no evidence for this from prospective controlled studies.⁷ A study carried out in the United Kingdom showed that around 20% of patients with COPD exacerbations who were hospitalized presented respiratory acidosis and that of these, 80% (72 patients/250 000 inhabitants) could benefit from NIV and, consequently, from admission to a RICU.⁸ The following patients can also benefit from RICUs: *a*) patients with diseases other than COPD with an indication for NIV, that is those that are associated with acute respiratory failure (mainly pneumonia in immunocompromised patients and acute cardiogenic pulmonary edema) or with exacerbated chronic respiratory failure (especially chest wall diseases and morbid obesity); and *b*) patients with severe disease for which continuous monitoring (but not NIV) is indicated, that is, pneumonia, acute asthma, life-threatening hemoptysis and pulmonary embolism, among others. Techniques such as fiberoptic bronchoscopy can also be carried out more safely in RICUs.

RICUs place pneumology in a privileged position within critical care medicine in general and respiratory critical care in particular, as they make it possible for patients with respiratory diseases of an intermediate level of severity to be cared for in specialized units headed by pneumologists. However, much remains to be determined. In Spain the true role of the pneumologist in the management of respiratory critical patients still needs to be defined. Intensive care physicians are ubiquitous in hospitals in which they are in charge not only of ICUs, but occasionally of emergency departments as well. Moreover, we still need to determine which physician should be responsible for patients requiring NIV for heart failure or for patients requiring noninvasive monitoring or NIV in the course of care on a conventional internal medicine ward. There will therefore need to be consensus among the various specialties to determine at what point the pneumologist becomes responsible for the patient with severe respiratory

problems and to what unit the patient should be admitted in order to guarantee successful treatment.

Certain aspects of the pneumologist's training will have to be consolidated in order to guarantee the success of RICUs. The trainee should be able to *a*) acquire the necessary skills and knowledge in those critical care techniques that have a direct application to pneumology and *b*) to master the provision of NIV. The first involves longer ICU rotations and, in those hospitals that have them, RICU rotations. The second means that hospitals that do not provide NIV will have to set up suitable external rotations in hospitals that do.

In conclusion, the specialty of pneumology should stimulate the creation and development of RICUs directed and controlled by pneumology departments, preferably within the hospital ward in order to facilitate patient flow from the ward to the RICU and vice versa and, in periods of reduced demand, to optimize bed use by allowing conventional admissions. However, in order to achieve this, we need to consider the organization of each hospital and its pneumology department. The 24-hour in-house availability of a pneumologist also needs to be provided for if this area of respiratory critical care is to be consolidated.

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