

## Horizons for Spanish Respiratory Medicine: Reflections

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*Quality is never an accident. It is always the result of intelligent effort.*

JOHN RUSKIN (1819-1900)

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Respiratory medicine has undergone constant transformation since its beginnings as the medical specialty of phthiology. Thanks to constant scientific and technical advances, and to their gradual adaptation to the needs of a continually evolving society in which respiratory diseases have changed in severity and prevalence, respiratory medicine is where it is today. The specialty has faced different challenges at different moments and the horizons that successive generations of Spanish pneumologists have looked toward have not always been easy to reach. The future will clearly be shaped to a large extent on the competence, vision, and the ability to respond to challenges of today's specialists, who are the ones who will take charge.

This paper, therefore, aims only to synthesize reflections on the horizons of the more or less immediate future of respiratory medicine. In an effort to organize the material, we have used a SWOT analysis—of our strengths, weaknesses, opportunities, and threats. First will come weaknesses, which are understood to be negative factors; if not controlled and overcome, they will represent obstacles to progress. Next, threats are aspects of our environment on which it is difficult to intervene; if they occur, they may also interfere with the attainment of objectives. Strengths are the attributes which can be relied upon to achieve growth. Finally, opportunities are circumstances that may arise around us. We cannot make them happen, but respiratory medicine will develop further if we are able to take advantage of them. From this perspective we might say that it is advisable to reinforce strengths with a purpose of taking the best advantage of opportunities that come our way, overcoming weaknesses in order to attenuate the effects of threats.

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### Weaknesses

Society is not very familiar with the name of our specialty and poorly understands the scope of our activity. This is one of our main weaknesses. The fact that respiratory diseases were once grouped as chest (lung and heart) diseases has meant that the concept of pneumology, which arrived later, has not taken root among the lay community. For those outside the health care profession it tends to be difficult to establish a connection between the word *pneumology* and the respiratory system, lungs, bronchi, or other structures we are concerned with. Both the name and content of pneumology are therefore less well known than they should be. By way of example, 90% of respondents did not know the meaning of the word *pneumologist* in a 1994 survey by the Spanish Society of Pulmonology and Thoracic Surgery (SEPAR). A Google search with the word *pneumology* in March 2007 located 715 000 hits, but there were 3 times as many hits for the word *nephrology*, 5.4 times as many for *cardiology*, and 6.2 times as many for *neurology*. Furthermore, the name of the specialty itself is not the only one society is unfamiliar with. Certain respiratory diseases that are highly prevalent, such as chronic obstructive pulmonary disease (COPD) or sleep apnea-hypopnea syndrome (SAHS), are usually referred to by their abbreviations, and that also impedes the diffusion of information about them among the lay public, even when a definition is included.

More media campaigns might help raise awareness of the respiratory system. Promoting relationships and collaboration with associations of patients with respiratory disease might also help. Another line of action would be the further development and enhancement of SEPAR's web page and the society's projects carrying the words "SEPAR years" in their titles (on COPD, asthma, pneumonia, lung cancer, sleep apnea, smoking dependence, tuberculosis, etc) which were initiated in 2002.

Even though at first the general public's lack of awareness of the specialty might seem unimportant, in fact it has very adverse consequences. One of them is failure to seek a respiratory medicine specialist's care in both public hospital and outpatient settings or in private practice. This, in turn, has a highly negative effect on health care organization. The result is that respiratory care is delivered by other specialists—whether generalists or physicians in related fields—a situation that is

detrimental to the quality of health care and also has an effect on the number of job openings. Patients' lack of knowledge of the names of their respiratory diseases also makes it difficult for them to establish an association between their affliction and the specialty. For these reasons it is necessary to explicitly and energetically establish the name, image, content, and importance of our field so that it might occupy its rightful place as soon as possible.

The communication outreach work described must be undertaken by individual pneumologists and the scientific associations that represent them and the effort must address not only the lay public but also public health authorities, hospital administrators, and those responsible for public health areas. There is no doubt that scant recognition of our specialist qualifications by public health administrative authorities has very important implications. One of them is the limited presence of specialists in local hospitals outside large urban areas or in some general hospitals. Surely it would be considered unforgivable for those hospitals to operate without cardiologists or gastroenterologists. However, depriving the populations served by these hospitals of the diagnostic or therapeutic care of respiratory specialists does not seem to elicit the same concern or, much less, careful consideration among public health care planners. We also call attention to the scant funding usually assigned for the evaluation of respiratory diseases in hospitals that do have the relevant specialist department among their services. By way of example, the following areas, in spite of their importance, usually lack both material and human resources: hospital or home respiratory support, diagnosis and treatment of SAHS, and continuity of levels of care in many hospitals and health centers in Spain. Recognition on the part of the government of the clinical impact of having diagnostic and therapeutic techniques available, and sometimes even the impact of specialists' self-esteem, is an issue that remains to be faced squarely.<sup>1</sup>

Another weak point in our specialty (and for many others) is dependence on funding from the pharmaceutical industry to support the work of scientific societies. It is widely known that official sources of funding have not been available for the educational, training, or research activities undertaken by scientific societies, which are logically nonprofit organizations; nor is it foreseen at this time that there will be any such funding from that quarter. The economic support for these societies (their meetings, conferences, publications, courses, research, management, etc) comes nearly entirely from the pharmaceutical industry. By way of example, 95% of the budget of SEPAR in 2005 came directly or indirectly from the industry and only 5% came from membership dues. Although it is true that thanks to this economic support we have been able to achieve quite a few of the aspirations of the community of Spanish specialists, it seems that greater diversification of funding sources would be in order as this would give scientific societies and their projects a firmer foundation in the future and would afford them greater independence in managing the society and planning objectives. The solution is not on the horizon and does not appear to be straightforward.

## Threats

A critical problem at this time in pneumology is the drawing of lines around the competencies of our specialty to set it off from others. Some disorders that affect the respiratory tract have multidisciplinary implications, so that discrepancies arise with the opinions of other specialists with regard to exclusivity or priority in diagnosis and delivery of care in certain diseases. In our opinion, what leads to excellence of clinical practice, efficient management of resources, and the generation of new knowledge is in-depth understanding of the available scientific evidence and appropriate interpretation of it. Only this can bring us to a situation of enduring leadership and a position of importance in the national and international scientific community.

Overspecialization, a consequence of how the specialty of respiratory medicine has developed, may also represent a weakness even though that might seem surprising. The constant appearance of complex new diagnostic techniques and therapeutic options has meant that some physicians dedicate all their professional attention to a specific field which may be more or less broad but which always forms a well-defined nucleus of activity, while perhaps neglecting other aspects of the specialty. This circumstance is surely responsible for the gradual development in recent years of single-interest scientific societies that concentrate on very specific portions of pneumology practice. Although this phenomenon brings certain advantages, it plainly carries with it the risk of fragmentation. It would therefore be proper to try to promote relations between these subspecialty societies and SEPAR, particularly because most pneumologists who belong to them are also members of the larger association. Furthermore, coordinating the interests of these separate societies should be given priority, even though the task will not always be easy; otherwise scientific effort and economic resources devoted to respiratory medicine will be dispersed, a situation that can only favor third parties.

Regarding conditions in the workplace, there are 3 aspects that deserve consideration for their possible implications for the future. The first is the age of members of our profession. Because respiratory medicine is a relatively young specialty, the number of retirements in the last 30 to 40 years has been very low in comparison with the number of newly trained specialists available for work. In 2003, however, 24% of Spanish pneumologists were over the age of 50 years,<sup>2,3</sup> so that the aging of the workforce over the next 10 to 15 years will be plain to see (Figures 1 and 2). On the one hand, this will mean that the workforce will become smaller as a result of aging and that there will be consequent workplace repercussions (eg, on availability for on-call duty shifts). On the other hand, although all retirement is in itself a scientific loss, it is not foreseen that specialized health care will be significantly disrupted, given the level of training received by resident physicians in the last 30 years. However, and this may be more important, these retirements will affect pneumologists who have for many years exercised important roles in the organization and management of services and have

Figure 1. Age-sex pyramids for Spanish specialists in respiratory medicine. On the left, is the pyramid for 2004, and on the right, the predicted pyramid for 2029. (Based on data from the confederation of Spanish medical syndicates, the Confederación Estatal de Sindicatos Médicos, or CESM.<sup>2</sup>)

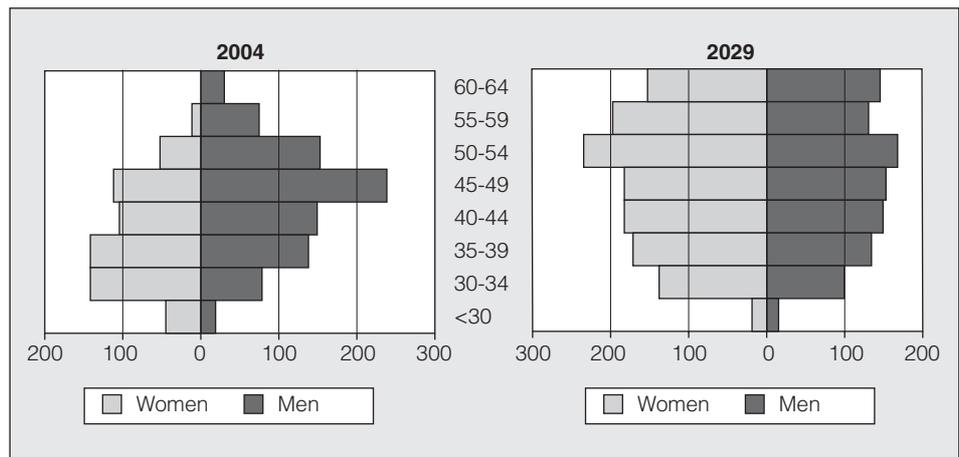
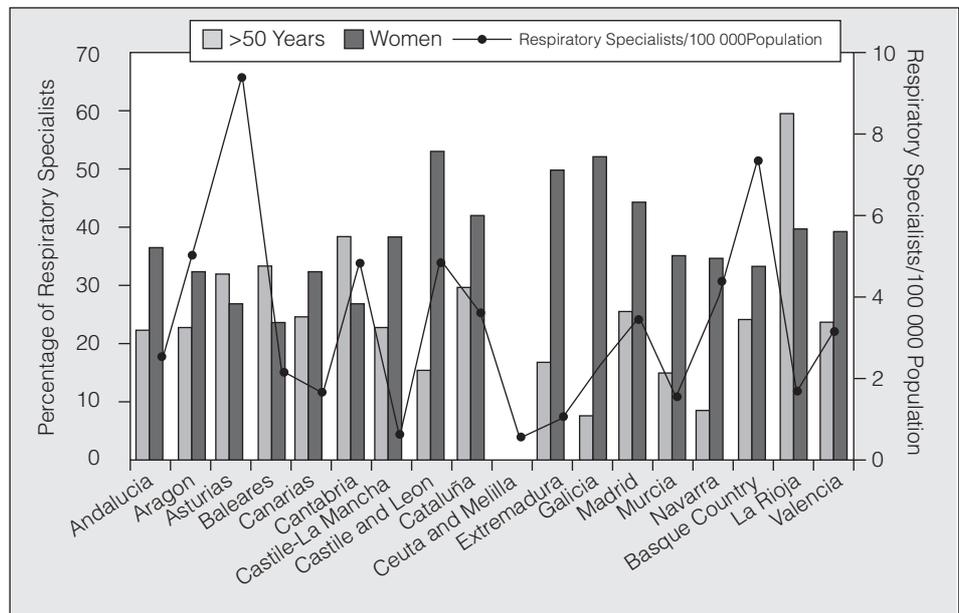


Figure 2. Distribution of aging and feminization of Spanish respiratory specialists by geographic area. The bars show the percentages of women and of Spanish respiratory medicine specialists over the age of 50 years, by autonomous community. The line points depict the number of specialists per 100 000 inhabitants in those communities. (Based on data from the confederation of Spanish medical syndicates, the Confederación Estatal de Sindicatos Médicos, or CESM.<sup>2</sup>)



served to represent the specialty before the public health authorities. They have interpreted their roles and exercised these functions in very personal ways on many occasions. It might therefore be prudent to foresee the possibility of gradual transfer of responsibilities tied to institutional posts and positions of leadership of clinical care, teaching, and research. Such a process would be in keeping with recommendations of the World Health Organization (WHO)<sup>4</sup> to alleviate the effect of workforce attrition and prevent a sudden generational handover, given that the new generation will suffer initially from inexperience, shortcomings and losses that would have negative impacts that would later be difficult to correct.

A second point of reflection relates to the feminization of medicine, a circumstance that has been recorded in all specialties in most Western countries<sup>3,4</sup> and is also very

evident in ours. Women presently account for 40% of the workforce but may exceed 70% within 15 to 20 years (Figures 1 and 2).<sup>2</sup> In 2006, 66% of residents in pneumology departments were women. What will the consequences be? It is difficult to know and any predictions are guesses. Medicine may become more “humanistic” and, perhaps, there will be less marked interest in private practice. At the same time, the number of requests for on-call duty shifts may decrease and there may be a need to schedule duty rosters differently to ensure that work and family life are compatible. There may also be greater interest in early retirement.<sup>4</sup> Changes are coming to respiratory medicine, whatever they might be, and medium- and long-term staffing needs should therefore be planned for.

A third work-related aspect that is particularly interesting is the uneven geographic distribution of Spanish respiratory

specialists (Figure 2). According to data published by the confederation of Spanish medical syndicates (Confederación Estatal de Sindicatos Médicos, the CESM),<sup>2</sup> the prevalence of specialists in respiratory medicine in Asturias and the Basque Country was around 9 and 7 pneumologists per 100 000 population, respectively; in Castile–La Mancha, Ceuta, and Melilla the rates were under 1 specialist per 100 000 population; and in the Canary Islands, Murcia, and La Rioja the rate was under 2 pneumologists per 100 000 population. It seems reasonable to pay particular attention to this variation, among others factors, when planning for the future.

In university education, the current rules that govern the appointment of official professorships (through the process called “capacitation” in which capability is confirmed) are not favorable to respiratory medicine. In 2006, there were 6 professors with chairs with an average age of 65 years and 19 other professors with an average age of 59 years. This suggests that there is significant generational change coming up. Among the factors currently considered necessary to obtain a professorship or a chair, however, one of the most important is that of having carried out and published research. Even with all concessions to the limitations and criticisms of the use of a candidate’s publication impact factor, there is no doubt that a researcher’s history is judged by it. The mean impact factors of journals among the top 10 and in the top quartile and classified under the heading of “respiratory system” in the Web of Knowledge database of the Institute for Scientific Information in 2005 were 4.451 and 4.793, respectively. Those numbers are far below the ones for the headings “medicine, general and internal” (15.231 and 7.686, respectively), “oncology” (17.29 and 9.039, respectively), “endocrinology and metabolism” (8.630 and 6.490, respectively), “hematology” (7.018 and 6.046, respectively), and “cardiac and cardiovascular system” (6.262 and 4.911, respectively), to note just a few relevant examples. As a result, if the current conditions remain unchanged, it is likely that the number of university teaching positions awarded to specialists in our field will decrease in the coming years, and as a consequence we will be unable to provide undergraduate students with the opportunity to learn about respiratory diseases first hand from us. The effects will be many and it is possible that they may have a negative impact of different types, for example, on the choice of specialty by undergraduates. What can be done to reverse this trend? “Impactolatry” must of course be resisted and we must lobby for the appropriate evaluation of a specialist’s scientific experience (investigative, educational, clinical), but we must also encourage young specialists in our field to think about a teaching career and try to accede to professorships if they feel a vocation for university teaching. Along those lines, it is useful to know that the system of “capacitation” will soon be replaced by one of “accreditation” involving changes in the selection process.

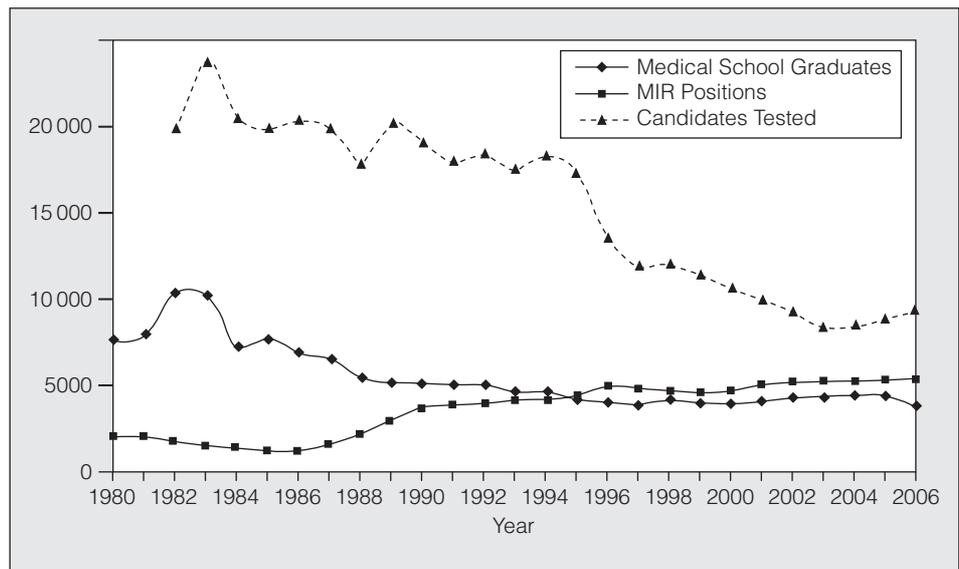
The organization of postgraduate training also harbors threats. The examination that gives access to medical internship and residency positions (the MIR program) has changed a great deal in recent years. The proportion of questions about respiratory diseases has remained

stable at 6% of the total, similar to the proportions for neurology and endocrinology. However, the MIR, which was once an examination passed by only 6% of the candidates has now become a mere tool for distributing positions, with a ratio of examinees to eventual residency candidates who passed the exam of 1.6 in 2003. Furthermore, since 1995 the number of residency positions accessed through the MIR is greater than the number of students finishing their university studies each year (Figure 3). Thus, the difficulty that was once attendant on making the necessary cutoff grade on the MIR has nearly disappeared. In this past year, even medical graduates with a negative score on the examination were assigned places. Therefore, it seems clear that preparing for the examination today only serves the purpose of achieving a score that allows a candidate to choose among specialties and hospitals. Although the disappearance of the so-called “historical backlog” of medical graduates without residency positions has been a very necessary boon, the undergraduate training of doctors who choose our specialty after having ranked low on the MIR access examination is probably not ideal, perhaps as a consequence of the type of education given in our medical schools for some time now.

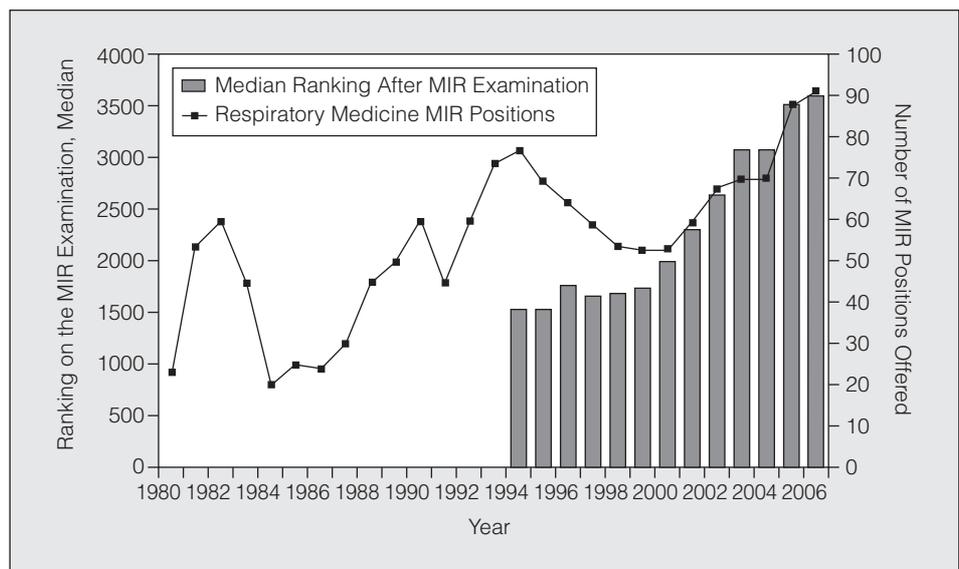
Respiratory medicine has also suffered in recent years in terms of graduates’ preference for the specialty when choosing a residency training position. Ours is currently one of the least favored fields (Figure 4). In 2006, residency positions were assigned to students with ranks of 633 to 4647. Only 2 candidates who chose training in respiratory medicine had ranks in the top 999; 8 ranked between 1000 and 1999; 17 between 2000 and 2999; and the remaining 61 residents had ranks between 3000 and 4647. To compare our situation with those of other specialties, only 3% of respiratory medicine places had been assigned at a point in the process when all the cardiology places had been taken, over 90% of the endocrinology places were occupied, and 40% of the neurology and gastroenterology positions had been granted (information kindly supplied by Dr F. Rodríguez de Castro, personal communication). These figures must be examined in the wider context of the total number of places offered each year, however. This is to say, the first respiratory medicine position granted with the number 500 in a year in which 2000 places were offered in total would be the equivalent of the first position being assigned at rank 1000 in a year in which 4000 places were offered. It is thus important to note that the number of places offered in respiratory medicine since 1980 has been rising, after the considerable decrease in 1984 and another decrease of less magnitude between 1995 and 2000. The average number of places offered each year is now about 55 (Figure 4). Many factors influence whether a candidate chooses our specialty or not,<sup>3,5</sup> including the following:

1. Lack of interest in the subject matter of pneumology, possibly because of superficial knowledge of respiratory diseases. The task of changing this situation falls to those who teach our undergraduates, and we must insist on the need to present the subject rigorously, competently, and

**Figure 3.** Spanish university students graduating with medical degrees between the academic years of 1985/1986 and 2005/2006, and the number of places for medical interns and residents (MIR) announced for those groups. The lines cross in 1995, so that after that point there were more residency positions available than there were medical students completing their degree.



**Figure 4.** Positions for medical interns and residents (MIR) in respiratory medicine from 1980 to 2006 and the median rank on the access examination obtained by residents assigned positions each year between 1994 and 2006. On average, 55 positions have been available annually in this period, and the graph shows that after the decreases of 1983, 1991, and 1995 (and continuing until 2000), the number of places has increased in the last 6 years.



in an interesting way. The attractiveness of practice in our specialty must be conveyed and students should be given opportunities for clinical contact, including practice with techniques we use.

2. The difficulty of obtaining employment after residency training. Because of the rise in the number of MIR places over the past 10 or 15 years, medical unemployment, which has traditionally affected those who practice general medicine, has gradually begun to affect medical specialties. A study carried out by the CESM in 2003 revealed an unemployment rate of 8.2% for specialists. Although more recent statistics are not available, it is likely that the rates declined somewhat after the recent offer of employment

in the public system. There are no respiratory medicine specialists among the unemployed in the autonomous community of Madrid at the moment of writing, for example. Nevertheless, the impression that it is difficult to obtain employment may persist for a certain period of time among recent graduates,<sup>6</sup> reducing the ability of our specialty to attract residents.

3. The prestige of the pneumologist is lower than that of other medical specialists. This situation probably also stems from the lack of awareness of our field and the poor understanding of the importance of respiratory diseases in the general population, points we have already analyzed in previous sections.

4. The limited opportunity to practice respiratory medicine in the private sector, in comparison with greater opportunities for other medical or surgical specialties. This circumstance may also be related to the lack of demand on the part of the public for specialist care from a pneumologist or to the nature of the specialty itself, which sometimes involves human or material resources that overlap with those of other fields.

### Strengths

The main strength of respiratory medicine is probably the high prevalence of respiratory diseases. COPD is currently the fourth leading cause of death in the United States of America, and among the 6 diseases causing the largest number of deaths in that country, it is the only one whose mortality rate is still rising.<sup>7</sup> According to WHO data for 1990, COPD caused some 50 deaths per 100 000 men in Europe and some 20 deaths per 100 000 women annually. In 2005, once again according to the WHO, 4.1 million deaths (7% of all deaths) were caused by chronic respiratory diseases (not including bronchopulmonary tumors).<sup>8</sup> A study of the situation in 47 countries published in 1997 showed that respiratory infections were the third cause of death and that tuberculosis specifically was the seventh<sup>9</sup>; the same ranks for both were predicted for 2020. Furthermore, lung cancer is the tumor with the highest incidence rate in men and in the population overall<sup>10</sup>; this disease affects developed countries in particular, to a degree that is associated with the number of years since smoking became a prevalent habit in each location. Lung cancer accounts for 21% of the tumors in men in the European Union and the related mortality rate is very high; more than 37 deaths per 100 000 person-years and 29% of tumor-related deaths in men are attributed to lung cancer.<sup>11</sup>

Respiratory diseases are epidemiologically important not only for the deaths they cause but also for the large number of chronic conditions and the associated disability. In the important IBERPOC study, COPD was found in 9.1% of the Spanish population and in over 14% of males, although it was also found that in over 78% of the patients, the disease had not been diagnosed before the study.<sup>12</sup> The prevalence of asthma is also rising.<sup>13</sup> At present, it is detected in 10% of children and 5% of adults in Spain.<sup>14</sup> SAHS is present in 4% to 6% of men and in 2% to 4% of women.<sup>15</sup> If we compare these data with the rates for other diseases the lay public is familiar with, such as chronic liver disease, whose mortality rate has decreased (9.5 deaths per 100 000 population<sup>16</sup>) or human immunodeficiency virus infection (fewer than 10 deaths/100 000 population in 2003<sup>8</sup>) the potential future importance of respiratory medicine begins to become clear. There can be no doubt, however, that there must be factors beyond the epidemiology of respiratory diseases that account for the limited prestige of our field. Those factors, by favoring other specialties rather than our own, may prevent the allocation of human and material resources that might be expected from the data shown. Once again it seems essential to develop a strategy to publicize the field of respiratory medicine through a

sustained campaign aimed at the general population; health care administrators may then eventually be influenced.

The appearance of new diagnostic and therapeutic techniques is a strength. Bronchoscopy holds many promises (endobronchial stents and treatments, diagnostic endoscopic ultrasound, early diagnosis and treatment of intraluminal neoplasms<sup>17</sup> and emphysema,<sup>18</sup> etc). Applications have emerged in recent years and more are to come as this is an area of the specialty in expansion. Likewise, the application by pneumologists of thoracic ultrasound or pleural diagnostic techniques is an area that is still progressing. The study and treatment of sleep disorders<sup>19</sup> and noninvasive mechanical ventilation (NIV) are also areas in which highly specialized training is required. We may only be seeing the tip of the iceberg of applications that are to reach the clinical setting in the future.<sup>20</sup> Detailed knowledge of these other procedures will probably not be within the reach of all respiratory medicine specialists and it may therefore be necessary to organize, within the foreseeable future, a list of what are now termed specific competencies.<sup>21</sup> In our opinion, just as units specialized in arrhythmias or hemodynamics should belong to, not split off from, cardiology, the respiratory areas we have mentioned should also remain within our specialty, developing their particular interests within the overall framework of respiratory medicine. In this way, we would avoid the risk of fragmentation and that these specific areas might grow to threaten the specialty overall, a development that would benefit no one in the medium and long term.

One of the greatest accomplishments of Spanish respiratory medicine is having inspired the disinterested work of many specialists who have not hesitated to dedicate time and effort to create and nurture our scientific societies.<sup>22</sup> Since the foundation of the Spanish section of the International Association for Bronchial Studies (AIEB) in 1954, of SEPAR in 1967, and of the various associations in nearly all the autonomous communities of Spain, many have worked persistently and hard to promote and benefit the growth of all facets of pneumology. Objectives have thereby been achieved that would never have been possible without the labor, dedication, and unselfishness of volunteers. The journal *Archivos de Bronconeumología*, for example, published since 1964, was included in the Index Medicus of the US National Library of Medicine in 1994. In May of 2001, after enormous effort, *Archivos* also achieved admission into the select group of source journals of the Institute for Scientific Information in Philadelphia. Since then, the impact factor has risen significantly (0.885 in 2003,<sup>23</sup> 1.401 in 2005, and 1.851 in 2006), and as a result this journal of Spanish-speaking pulmonologists and chest surgeons has for several years been among the top-ranked journals in Spain<sup>24</sup> and even ranks higher than some important English-language journals in the field. SEPAR has also supported many other publications for some years. *Prevención del Tabaquismo*, the only journal in the world that covers tobacco-related diseases in the Spanish language, is an example. SEPAR has also produced the series known

as the SEPAR guidelines<sup>25</sup> since 1985, as well as manuals of procedures since 2002, and numerous other books and booklets in the last 2 decades. These are just some of many publications that attest to the active nature of Spanish respiratory medicine, a level of activity that should be interpreted as a strength to exploit in the coming years.<sup>26</sup>

Human capital, that is to say the specialists in respiratory diseases themselves, are a quantitative and qualitative source of incalculable wealth that must be considered another strength. How will our human resources develop over time? It seems plain that the total number of Spanish physicians will still rise in the immediate future. However, it is likely that a considerable number of retirements will take place after 2015 because of the large numbers of medical students in the 1970s and early 1980s. If the number of students graduating each year remains at the current level, it seems clear that after 2020 the total number of physicians in Spain will decrease significantly.<sup>2</sup> Logically, these numbers will not affect all specialties in the same way. According to the CESM<sup>2</sup> study, the number of pneumologists has risen in recent decades and the trend is expected to hold steady until 2015. Therefore, the number of specialists in this field will rise from just under 1500 in 2004 to somewhat more than 2000 in 2015. From that year onward, and until 2030, there will be only small fluctuations if current conditions are maintained (Figure 5). That number may be too low, however, should the demand for respiratory care increase. Some recent studies have pointed out that there will be a serious deficit of pneumologists in Spain.<sup>3</sup> According to the CESM study, in 2003 there were 3.47 pneumologists per 100 000 inhabitants, a number that was very close to the one calculated by the professional affairs committee of SEPAR for 2002 (3.12 per 100 000 inhabitants).<sup>27</sup> It is also near the WHO-recommended rate of 3.5 to 4 specialists per 100 000 inhabitants, although it is lower than the mean number of respiratory medicine specialists in Europe at this time.<sup>3</sup>

Deciding whether or not those numbers are sufficient is a matter of great importance. In effect, the number of residency positions in respiratory medicine in the coming years should depend on the health care needs that can be foreseen for the future and not on hospitals' teaching capacity.<sup>3</sup> SEPAR and the National Commission for Pulmonology (CNN) have invested human and economic resources in estimating needs; the analysis is necessarily complex and is part of a project that is still ongoing. There is still much we do not know and many factors need to be taken into consideration, including: *a*) the changing prevalences of respiratory diseases; *b*) population aging (21% will be over the age of 65 years in 2020); *c*) migratory patterns (Spain had over 4 million immigrants in 2005); *d*) the "drain" of Spanish respiratory medicine specialists to other countries (related to working conditions, social recognition, resources for professional development); *e*) the free movement of specialists within the European Union; *f*) theoretical and technical developments in the field; *g*) new modalities for delivering medical care (day hospitals, home hospitalization, telemedicine, intermediate respiratory

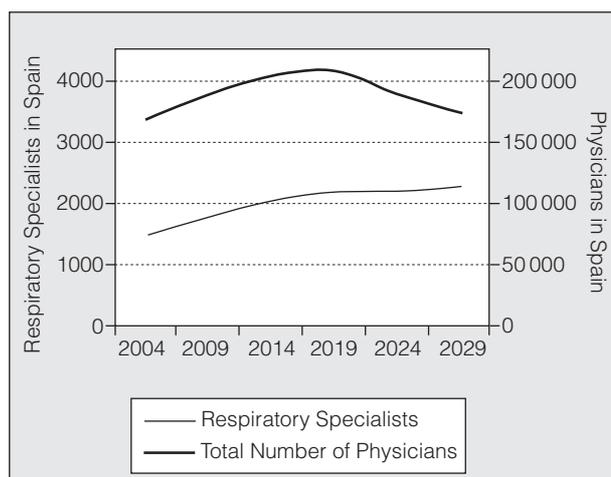


Figure 5. Number of respiratory medicine specialists in Spain predicted for the coming years (estimated from current data on the assumption of maintaining the current training activity for residents compared with the total number of physicians in Spain for the same years. (Based on data from the confederation of Spanish medical syndicates, the Confederación Estatal de Sindicatos Médicos, or CESM.<sup>2</sup>)

care units for chronic disease patients, new "niches" in the labor market, etc); *h*) new demand for specialists (for new hospitals, primary health care centers); *i*) the definition of the respiratory specialist's role in health care (consultant, technician, specialist-generalist); *j*) changes in medical knowledge and awareness in the general population; *k*) the level of coverage that will be funded through the public health care system; *l*) the introduction of new means for the early detection or prevention of diseases; *m*) the importation of specialists from other countries in the European Union; and *n*) the age of retirement.

Spanish respiratory medicine currently has specialists who trained in recognized centers through the MIR system over the last 27 years. The scientific and professional level of these physicians is fully comparable, and sometimes superior to, that of pneumologists trained in countries with more advanced health care systems. The number of accredited training hospitals has gone from 36 in 1986 to 62 in 2005. Twenty-four and 88 places were assigned in those years (considerably fewer than the 64 and 105 places that were accredited for those hospitals in those years). We need to assess whether the maintenance of the scientific level of clinical residency training has or has not kept pace with the increase in numbers of residents over time, and likewise whether our residents and the future of our specialty benefit more from having many hospitals accredited to train (given that they are stimulated by the incorporation of residents) or from limiting training to hospitals with high levels of care, larger case loads, and more teaching staff, with the consequent concentration of residents in few hospitals. In any case, it is a moral obligation for educators of residents to analyze the strengths and weaknesses of the centers where they work, in order to facilitate whatever external rotations they consider would be useful. The

objective must always be to provide the best possible training for our residents.

Our field has achieved important research objectives in recent years. The number of grants from the Spanish Health Research Fund (Fondo de Investigación Sanitaria Español) has remained stable over the past 20 years, although there have been significant variations from year to year in the number of applications made,<sup>28</sup> and both the amount of funding for projects related to the respiratory tract and the number of publications from Spanish authors have risen considerably (Figure 6 and Table 1). In 2006, 115 applications were made and 40 (35%) were funded in pneumology, a success rate that places our specialty above the average of 30%. The total amount awarded was €2 857 058. Furthermore, thanks to magnificent work by SEPAR, respiratory diseases, because of their high and increasing prevalence in an aging Spanish population, have been included in the list of areas prioritized by the Spanish National Plan for Research, Development and Innovation over the 4-year period of 2004 to 2007. Similarly, SEPAR's creation in 2002 of the Breathe Research Center (Centro Respira de Investigación) allowed 18 hospitals to bring together 63 working groups and over 500 researchers to form a Cooperative Research Thematic Network (RETIC) of the Carlos III Health Institute. These entities formed the group termed the Breathe Network (Red Respira), now disarticulated.<sup>29</sup> This history probably facilitated the acceptance of applications from some groups of pneumologists in the new RETIC funding period as well as their incorporation as a Network of Centers for Biomedical Research (CIBER). Twenty-seven working groups with 222 investigators make up the respiratory disease network. In summary, these data show that the investigative capacity of Spanish pneumologists should be considered a strength. There should be no doubt about the usefulness of incorporating groups interested in forming part of these structures in the short and medium term.

### Opportunities

Each moment and setting offers opportunities to promote the development of our specialty. How we take advantage of them depends on our abilities and strategic vision at different moments, and at times fruitful lines of action have been followed.

Clinical medicine offers several areas that are currently of interest. Some of these areas have been with us for many years, but the introduction of new therapies or approaches to problems have converted these areas into opportunities. This has come about with treatment for smoking dependence, for example, as it has been projected to the population and made an impact in the media. The fight against smoking has been ongoing for SEPAR, in particular, and for Spanish respiratory medicine as a specialty in general. In 1968 a Committee Against Smoking already figured in SEPAR's organizational structure. In 1988 it would become the Committee for the Prevention of Tobacco Addiction and the association's Assembly on Tobacco Addiction has been active since 1995. The journal *Prevención del Tabaquismo* first

appeared in 1994 and in its 12 years of publication it has been widely distributed nationally and internationally as its importance has grown. The unerring demonstration of the many serious changes produced by tobacco smoke, the development of more effective treatments to support smoking cessation, and the new Spanish antismoking laws of 2006 are circumstances that have increased the demand for experts in tobacco addiction. There is no doubt that this new specialty niche (tobacco addiction units and consultancies), in the well-known context of SEPAR's history of scientific and clinical leadership in this field, must be viewed as a clear opportunity to improve that must not be missed.<sup>30</sup>

The most appropriate clinical characterization of SAHS and the increase in available resources for diagnosing the disorder have led to an exponential rise in demand for detection and treatment units, and there has been a corresponding rise in demand for specialists. There is no doubt that this field also offers opportunities that respiratory medicine specialists should take advantage of to further their professional development. The call for specialists with experience acquired in recent years should be sufficient reason for pneumologists to take a clear leadership role in this field.

A third area of growth at this time is NIV. The prevalence of acute or chronic diseases that can be treated with this technique, and the impact it has on patient survival make this another area with excellent opportunities. Intermediate respiratory care units, in which it is possible to carry out continuous cardiorespiratory monitoring and initiate NIV if necessary, should be extended at least to all Spanish secondary and tertiary care hospitals.<sup>31</sup> Furthermore, the need to provide continuous care for patients who are initiating these new therapeutic modalities means that respiratory medicine duty rosters will be necessary. NIV should be taken advantage of, therefore, above all for its enormous benefit to our respiratory patients, but also because it can be a means of growth. Finally, fields such as interventional bronchoscopy, telemedicine, home care for respiratory patients, or basic and clinical research are examples of some of the areas that will provide new opportunities, thanks to current technical developments or to modes of care that will be unveiled in the future.<sup>32-35</sup>

It could be useful, therefore to take full advantage of these opportunities at this time, to encourage relationships with primary care specialists and strengthen strategic areas such as respiratory physical therapy or nursing. In this respect, the exponential growth in the scope of respiratory medicine and the accumulated theoretical and practical experience in this field should consolidate the position of leadership of the respiratory specialists in matters of diseases of the chest. Training in evidence-based techniques should favor this objective.<sup>36</sup> The application of such techniques by specialists with recognized clinical experience, the establishment of recommendations and clinical guidelines for the specialty or the adaptation, if appropriate, of the most important international instruments within the framework of SEPAR and other societies in the autonomous communities are also good opportunities to emphasize the role of the pneumologist.

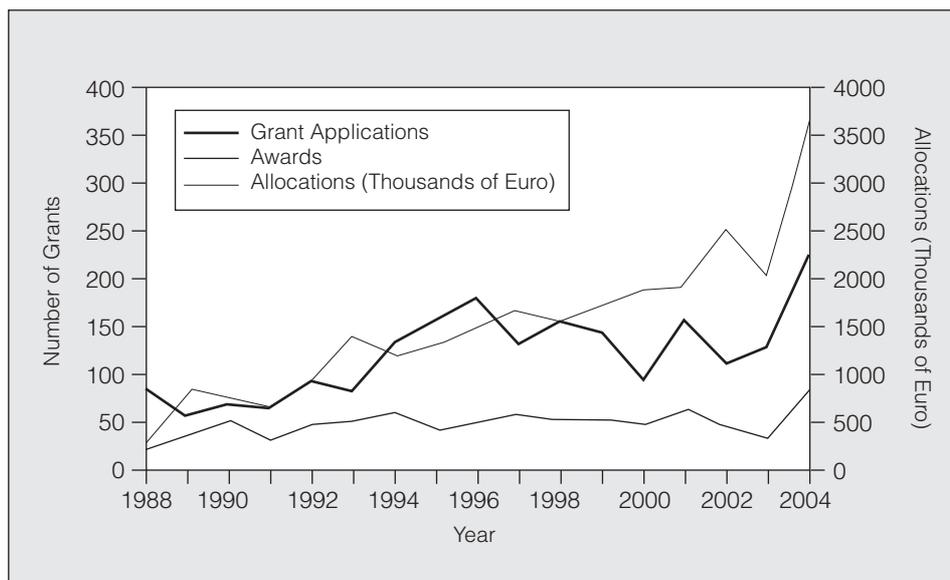


Figure 6. Research projects related to the respiratory tract funded by the Spanish Health Research Fund over the past 20 years; based on data from García Río et al.<sup>28</sup>

However, the best opportunities for the development of our specialty also depend on activities undertaken by SEPAR as the most representative Spanish respiratory medicine society, and this will be even truer in the future. We have already noted the importance of the “SEPAR years” (for COPD, asthma, pneumonia, lung cancer sleep apnea, smoking, and tuberculosis) and the growing impact they have had on the general population and on health care administrators since they were started in 2002.<sup>37</sup> The publicity campaigns that focus on these diseases have mainly aimed to increase knowledge among patients, their families, and the Spanish population in general. In our opinion, it is time for reflection, especially by the society’s directors, on whether these campaigns have or have not had the desired intensity and outcomes and, therefore, if this is a strategy to maintain, modify or redefine.

SEPAR’s web page is undoubtedly a great opportunity for Spanish respiratory medicine. It can be used to emphasize our many areas of interest both in its section for members (with protected, or restricted, access) and the section for non-member health professionals and for patients, their families and the general population. In the section for members, it is possible to include the following types of information: *a)* news and institutional information;

*b)* internal and external funding opportunities for research in respiratory medicine; *c)* activities related to working groups or integrated research programs; *d)* aspects related to postgraduate training (programs, exchanges, accredited units, etc); *e)* continuous professional development; *f)* books, periodicals, recommendations (including SEPAR’s own) and other guidelines; *g)* content mainly addressed to resident physicians (general information, job announcements, etc); *h)* meetings, symposia, talks, courses, and conferences organized by SEPAR; *i)* electronic mail for members; and *j)* links to organisms, institutions, scientific societies, or relevant biomedical journals. Some of these aspects, such as meeting announcements, conferences, recommendations and SEPAR periodicals can also be inserted in the section of the web page dedicated to non-member professionals in order to increase their interest in our specialty and, as a result, their view of respiratory medicine as a steady point of reference for everything related to respiratory diseases. Finally, the possibilities of the section aimed at patients, their families, and the general population are considerable: communication to the public of scientific information on the most prevalent respiratory disorders; announcements of patient- and family-oriented pamphlets, magazines and books on these diseases<sup>38</sup>; news in respiratory medicine

TABLE 1  
Original Articles, Editorials, and Review Articles Published by Spanish Authors in Respiratory Medicine Journals Included in the Science Citation Index Expanded–Journal Citation Reports During the Period 1973-2005<sup>28</sup>

| Article Type      | 1973-1980 | 1981-1985 | 1986-1990 | 1991-1995 | 1996-2000 | 2001-2005 | Total |
|-------------------|-----------|-----------|-----------|-----------|-----------|-----------|-------|
| Original articles | 55        | 101       | 186       | 325       | 619       | 1003      | 2289  |
| Editorials        | 1         | 0         | 0         | 15        | 11        | 141       | 168   |
| Reviews           | 0         | 1         | 3         | 6         | 7         | 20        | 238   |
| Total             | 56        | 102       | 189       | 346       | 637       | 1164      | 2695  |

TABLE 2  
**Membership Counts for Each of the 14 Respiratory  
 Medicine Associations by Spanish Autonomous Community  
 on December 31, 2005\***

| Local Respiratory Medicine Society  | No. of Members |
|---|----------------|
| Balearic Islands Respiratory Association (AIRE)                                 | 45             |
| Asturian Society of Respiratory Tract Disease (ASTURPAR)                        | 155            |
| Canary Islands Society for the Respiratory Tract (NEUMOCAN)                     | 101            |
| Society of Pulmonology and Thoracic Surgery of Madrid (NEUMOMADRID)             | 482            |
| Southern Association of Pneumologists (NEUMOSUR)                                | 457            |
| Aragon Society for the Respiratory Tract (SADAR)                                | 84             |
| Respiratory Tract Society of Extremadura (SEAR)                                 | 29             |
| Society of Respiratory Disease of Castile-Leon and Cantabria (SOCALPAR)         | 177            |
| Society of Respiratory Disease of Castile-La Mancha (SOCAMPAR)                  | 17             |
| Catalan Pulmonology Society (SOCAP)   | 350            |
| Galician Respiratory Disease Society (SOGAPAR)                                  | 180            |
| Murcian Society of Respiratory Tract Disease (SOMUPAR)                          | 53             |
| Pulmonology Society of Valencia (SVN)   | 202            |
| Society of Respiratory Tract Disease of the Basque Country and Navarre (SVNPAR) | 172            |

\*The societies represented a total membership of 2504 in 2005, at a time when the members of the Spanish Society of Pulmonology and Thoracic Surgery (SEPAR) numbered 2636.

of general interest; information that is useful for associations of respiratory disease patients, links to Internet resources, etc.

Much, if not all, of what we have said about opportunities that can be derived from SEPAR projects may also be true for the societies in the autonomous communities. However, it seems clear that for their effort to develop into a genuine opportunity for Spanish respiratory medicine overall, a necessary condition is coordination of efforts, the only way to unify aims, avoid fragmentation, promote scientific consensus, and receive the greatest yield from available resources. And conversely, the lack of coordination between SEPAR and the societies in autonomous communities could represent a genuine threat for our specialty. Most of these societies were founded between the late 1970s and the late 1980s, with the single exception of the Catalan Pneumology Society (SOCAP), which was established in 1930.<sup>39</sup> It is also interesting to remember that in December 2003, of the 1891 respiratory medicine specialists in Spain, 1643 were members of SEPAR, while 1621 were members of one of the 14 societies in autonomous communities. A total of 190 pneumologists do not belong to SEPAR, but do belong to some local society (Table 2). This is to say, most Spanish pneumologists belong to both the national society and the society in their autonomous community. This serves to support the idea that coordination and

understanding are not only desirable but certainly also easy to achieve.

Undergraduate and postgraduate teaching must also be considered an opportunity for the specialty. Medical students are our future resident physicians and these, in turn, will be the ones charged with increasing the vitality and public image of our field. The new organization of undergraduate education as a consequence of the implementation of the European Space for Higher Education is a good opportunity to improve relations with students so as to increase their knowledge of the content of respiratory medicine and reinforce competencies, with the aim that our specialty should appear to them as a good option when the time comes to select a residency program. New, rigorous educational approaches should be developed in the near future: undergraduate and postgraduate tutorials (masters, doctoral studies and thesis writing); classrooms and virtual spaces for acquiring skills; and above all the genuine integration of students into hospital services for practical training.

The Hermes program and consequent development of the syllabus for respiratory medicine can be named as an early opportunity available in education. This project of the European Respiratory Society aims to define the competencies of the specialty and achieve common recognition that will truly facilitate the free circulation of pneumologists within the European Union.<sup>40</sup> The syllabus serves the purpose of establishing guidelines for the acquisition of knowledge, competencies, and skills for physicians in training as well as to name the requirements that must be met by respiratory medicine services who wish to be accredited as postgraduate training centers. This effort should also possibly be considered an opportunity (to be promoted or even implemented by SEPAR's national commission for the field, the CNN) to reconceptualize the figure of the tutor of residents in training and to create a portfolio of educational services that would allow more enriching external rotations to be selected in accordance with a resident's personal interests.

Current research opportunities in our field are the fruit of years of work by Spanish specialists. As mentioned, the constitution of the CIBER respiratory disease network and the inclusion of respiratory diseases in the seventh framework program of the European Union<sup>41</sup> are circumstances that open up new possibilities for investigation in our field that will certainly be taken advantage of by Spanish specialists. However, it is important to note that although work in this area has improved a great deal in recent years, many more population-based studies on the most important respiratory problems should be undertaken, and they should be on clinically and socially relevant issues.

The excellent clinical practice and research of Spanish specialists for many years has placed us in a very favorable position for increasing our international participation. Better knowledge of English and the ease of Internet communication should help recently trained specialists to apply for and obtain grants to continue their studies abroad. The international participation of these specialists and the benefit that can be derived from their time away, both from

a scientific point of view and in terms of the participation of Spanish pneumologists in the field's leadership, should be considered an excellent opportunity.

Finally, we must close with our sincere thanks to those who have fought for our specialty over the last few decades, providing a solid foundation on which our future can be built. In these brief reflections we have pointed out some of the aspects that may mark this future and take us on roads we hope are favorable. The effort, enthusiasm, and strategic vision of today's respiratory medicine specialists are what will determine those directions. May our choices be the right ones.

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