

## UPDATE

### Pulmonary Medicine residency in Brazil\*

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**Background:** A residency in Pulmonary Medicine represents the best source of training for those who wish to specialize in the area. In Brazil, the *Comissão Nacional de Residência Médica* (National Medical Residency Commission) regulates such programs.

**Objective:** To analyze the number of programs and their levels state of accreditation, the number of residents and the distribution of these programs and residents among the various institutions throughout Brazil.

**Methods:** The list of programs furnished by the National Medical Residency Commission in April 2003 was analyzed, and the basic criteria for accreditation in the area (according to the legislation currently in effect) were reviewed.

**Results:** Of the 58 accredited programs, 35 are offered in hospitals in the southeastern region of Brazil, and 133 of the residents are also there. In contrast, there is only 1 accredited program, and there are only 3 residents enrolled in that program.

**Conclusion:** Although all 58 programs are accredited, most are clustered in the southeastern region. It is therefore necessary that the *Comissão Nacional de Residência Médica* and the *Sociedade Brasileira de Pneumologia e Tisiologia* (Brazilian Society of Pulmonology and Phthisiology) begin a joint project in order to manage the creation of new programs. Thus, the number of programs and residents required for each of the various regions could be determined.

**Key words:** Residency/Medical, Pulmonary Disease (Specialty), Internship and Residency

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Submitted: 24 June 2003. Accepted, after revision: 4 February 2004.

#### **Abbreviations used in this study:**

- CNRM – Comissão Nacional de Residência Médica  
(National Medical Residency Commission)  
SBPT – Sociedade Brasileira de Pneumologia e Tisiologia  
(Brazilian Society of Pulmonology and Phthisiology)

## INTRODUCTION

A residency in pulmonary medicine represents the best source of training for those who wish to specialize in the area. Residents are supervised on duty by professionals of great ethical and technical competence.<sup>1</sup>

The *Comissão Nacional de Residência Médica* (CNRM, National Medical Residency Commission) was created in 1977 with the objective of establishing rules and requirements that would regulate the accreditation of residency programs. To date, the CNRM has overseen 50 recognized specialties and their respective spheres of activity<sup>1,2</sup>.

The CNRM resolutions 01/81 and 17/81 established prerequisites for admission to residency programs. For admission to a pulmonary medicine residency program, at least one year of training in clinical medicine or pediatrics is required<sup>3</sup>. Later, CNRM resolution 04/83 expanded the regulation of such programs by determining the minimum duration of training, listing compulsory and optional internships required in programs with a two-year duration, and allowing residents an optional third year in order to supplement their studies<sup>3</sup>.

Any institution interested in offering residency programs should be able to provide adequate infrastructure and make it possible for residents to execute a sufficient number of procedures, as well as have a well-devised educational program and well-trained head residents who can supervise the activities of residents<sup>4</sup>.

Acknowledging the need to update pulmonary medicine residency programs, the CNRM approved Resolution 05/02 in 2002<sup>2</sup>. The resolution established new criteria for accreditation of programs in the area:

- All programs must have a two-year duration;
- The prerequisite of completion of a one-year residency program in clinical medicine accredited by the CNRM is to be extended to two years;
- The annual schedule for on-duty training must include a minimum of 20% hospital ward time a minimum of 30% outpatient treatment time and a minimum of 15% emergency room time;
- Residency training must be under the supervision of competent professionals at all times. On-duty training must account for 80% to 90% of the schedule and the remaining time must be used for supplementary activities of a theoretical nature;
- Mandatory internships in pulmonary function tests, intensive care, bronchoscopy, respiratory rehabilitation, allergy and immunology, laboratory for cough studies, and sleep respiratory disorders must account for at least 15% of the schedule;
- Programs must offer optional internships in preventive and social medicine directed toward activities that are of interest to the specialty, hemodynamics, otorhinolaryngology, among others, according to the institution criteria;
- Supplementary activities of a theoretical nature must include clinical anatomy sessions, discussions of scientific articles, clinical radiology sessions, courses, lectures and seminars. Such activities must address themes connected with bioethics, medical ethics, scientific methodology, epidemiology and biostatistics;
- Several tools such as written tests, oral tests, practical tests and performance evaluation using aptitude scales must be used for periodic (at least once per trimester) assessment of the resident;
- Residents must be required to either produce a monograph or have a scientific article published at the end of the training, according to the institution criteria;
- In order to be enroll in the second year of the program and receive their certificates of completion, residents must complete 2,280 hours of training and achieve a satisfactory average level in the assessment carried out throughout the year. Passing grades must be defined by the residency committee of the institution in its internal regulations. Residents who fail to meet such criteria will be dismissed from the program.

If permission is granted by the CNRM, residency programs in pulmonary medicine may offer an additional year of optional training in endoscopy and pediatric pulmonology in order to further increase the knowledge and develop the abilities of residents<sup>2,5</sup>.

## METHOD

A general communication issued by the Executive Secretary of the CNRM on April 24, 2003 was analyzed. The communication lists the pulmonary medicine residency programs in Brazil, including the name, address and administrative affiliation of each institution, as well as the number of residents per year of training, the current accreditation status of each program and the locations of the teaching hospitals in each of the several regions of the country. In addition, the document details standards for accreditation of residency programs in the area (Resolution 05/02)<sup>2</sup>.

The hospitals were grouped according to the CNRM system for accreditation of programs. This system makes provisional accreditation possible during the first two years of training of incoming residents. Later, after an additional on-site evaluation, the CNRM may either grant full accreditation for five years, hold an inquiry or (if any inadequacies are found in either the program or the institution) cancel the program<sup>1,6</sup>.

## RESULTS

Table 1 shows that 35 (60.35%) of the 58 institutions whose programs are accredited by the CNRM are located in the southeastern region of Brazil, and that only one is located in the northern region. Approximately 67.35% of all residents are concentrated in hospitals located in the Southeast, followed by 13.64% in the South, 11.61% in the Northeast, 6.06% in the Central-west, and 1.51% in the North.

The difference between the total number of first- and second-year residents is attributable to variations in the annual availability of openings for new students, the number of students who pass the examinations and the number of dropouts. The fact that there are 33 third-year residents is explained by the fact that the CNRM accredited three-year programs for only 14 (24.13%) of the 58 institutions, whereas the remaining 44 offer two-year programs.

Table two shows that all the programs analyzed are accredited. Only 8 (13.80%) are still accredited on a provisional basis and are awaiting the completion of the training of their first group of residents. Full accreditation may be granted for five years after an additional on-site evaluation is carried out by doctors appointed by the medical residency commissions of the respective states or by the regional coordinator.

## DISCUSSION

Current discussions regarding pulmonary medicine residency programs focus on two main concerns: the large concentration of hospitals, medical schools and residents in the southeastern region of Brazil, and the need to constantly update basic criteria for the accreditation of residency programs. Of a total of 112 courses acknowledged by the *Ministério da Educação e Cultura* (Ministry of Education and Culture) in December of 2003, 48.22% are located in the Southeast, whereas only 8.04% are located in the North<sup>7</sup>. Recently, the *Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira* (Anísio Teixeira National Institute of Educational Studies and Research) of the *Ministério da Educação e Cultura* conducted the University Education Census<sup>8</sup>. The census showed that, of the 8,363 students graduating in 2001, 60.15% graduated from 53 schools of medicine in the Southeast, 16.98% from 18 schools in the Northeast, 16.12% from 23 schools in the South, 3.82% from 4 schools in the North, and 3.17% from 8 schools in the Central-west.

According to data furnished by the CNRM and statistics from the demographic census<sup>9</sup>, a total of 80 students will have completed residencies in pulmonary medicine by the end of 2003. Of those, 67.5% are currently studying in the Southeast (where there are an estimated 72,430,000 inhabitants), 15% in the South (25,110,000 inhabitants), 8.75% in the Northeast (47,782,000 inhabitants), 7.5% in the Central-west (11,638,000 inhabitants) and 1.25% in the North (12,911,000 inhabitants).

Members of the CNRM, head residents, residents, and members of the professional societies alike acknowledge the need to constantly update the basic criteria for the accreditation of residency programs. The issue has been discussed in various meetings and seminars. Of note was a seminar entitled "Minimum Requisites of a Program of Pulmonary Medicine Residency", which was held at the *Fundação de Desenvolvimento Administrativo* (FUNDAP, Foundation for Administrative Development) in January of 1991<sup>10</sup>. The recommendations brought forward in the seminar have served as a reference for the improvement of the programs in the area.

At the aforementioned seminar, the following resolutions were made and merit special mention: the pre-requisite of completing a one-year residency program in clinical medicine should be mandatory, whereas a residency in pediatrics should no longer be accepted; the schedule for on-duty training in the first year of residency should include 40% hospital ward time, 20% outpatient care time and 15% emergency room time; internships in pulmonary function tests, endoscopy, intensive care and imaging diagnosis should now be mandatory; internships in preventive medicine, social medicine, rehabilitation, allergy and immunology, pathological anatomy, otorhinolaryngology, Pediatric pulmonology and medical information science should be offered as optional; and internships in other institutions should be limited to two months of training per year.

The seminar participants concluded that, by the end of training, a resident should be able to analyze, manage and treat disorders of the respiratory system. In addition to carrying out clinical evaluations, the resident should be capable of interpreting chest X-rays and chest computed tomography scans, bronchograms, pulmonary scintigrams and pulmonary function test results, as well as performing invasive procedures such as thoracentesis and pleural needle biopsy<sup>8</sup>.

In some countries, the criteria for the accreditation of residency programs in pulmonary medicine are more detailed in some aspects. This can be positive, not only to ensure the quality of the training but also to establish parameters for the evaluation of such programs. For example, the *Comissão Nacional de Pneumologia da Espanha* (National Pulmonology Commission of Spain)<sup>11</sup> devised the following regulations for the accreditation of teaching units in the area: the service structure must have physical facilities suitable for hospitalization, ambulatory consultation, endoscopy and pleural procedures, pulmonary function tests and the study of sleep respiratory disorders, as well as meeting rooms; there must be equipment for pulmonary function tests, the study of sleep respiratory disorders and non-invasive mechanical ventilation, as well as fiberoptic bronchoscopes and needles for pleural biopsies; programs must have clear teaching, research and social welfare objectives and regulation of their internal organization, as well as keeping a record of the activities developed; there must be diagnostic protocols and treatment protocols for the following problems commonly found in respiratory diseases: benign and malignant neoplasms, chronic obstructive pulmonary disease, respiratory infections, asthma, sleep respiratory disorders, chronic respiratory insufficiency, interstitial diseases, pleural diseases, oxygen therapy, respiratory physiotherapy and non-invasive mechanical ventilation; the dynamics of the service must make it possible to attend 700 new inpatients and 2,500 outpatients, perform 1,200 pulmonary functional tests, 350 bronchoscopies, 30 pleural biopsies and 100 studies of sleep respiratory disorders annually.

In the United States, there have been precise criteria for residency programs in pulmonary medicine, as well as accreditation requirements for such programs, since 1999<sup>12</sup>. However, the number of procedures that residents must perform has yet to be established.

In Brazil, Article 10 of CNRM Resolution 05/02 states only that institutions must have the necessary structure, equipment and organization for the good development of

programs, but it does not establish the number of procedures that residents must perform, nor does it define the curriculum<sup>2</sup>.

A positive aspect of residency programs in Brazil is that they are obliged to address issues related to bioethics and medical ethics, a practice that furthers the moral development of residents. Such issues are addressed, preferably, through the discussion of cases treated on duty in sessions called ethical-clinical classes, which are coordinated by head residents and have the participation, when necessary, of bioethics professors, lawyers and representatives of the regional councils of medicine, among others, in order to elucidate pertinent questions<sup>13,14</sup>. In the United States and in Spain, the recommendation to perform activities according to generally accepted ethical precepts is included in the list of general competencies for residents<sup>12,15</sup>.

Training in emergency care is another aspect included in the CNRM requirements and lacking in those of residency programs in some other countries. In Brazil, this training must take place in public hospitals or clinics, in which the resident can develop clinical or pulmonology skills throughout the residency. Training in intensive care units must take into account the workloads that accompany the obligatory internships. The guidelines of the *Sociedade Espanhola de Pneumologia e Cirurgia Torácica* (Spanish Society of Pulmonology and Thoracic Surgery) detail emergency room and intensive care training programs throughout the pulmonary medicine residency that are designed to augment the education of the residents<sup>15</sup>.

Some American authors have outlined the skills to be acquired by residents working in emergency rooms in the USA. They focus on the guidelines established by the American Thoracic Society and American Lung Association, which recommend two-year respiratory disease training programs and one- to two-year intensive care training programs. In both cases, the training programs are dependent upon adequate infrastructure, residents learning to perform the necessary procedures, course content and resident acquisition of the skills required to treat both adults and children<sup>16</sup>.

Janz et al. contributed significantly to the advancement of this type of training, listing the skills that should be taught during the residency and establishing objectives, each of which is targeted at a specific potential respiratory function-related scenario that could be encountered in an emergency room setting<sup>17</sup>. Such scenarios include cyanosis, dyspnea, hemoptysis, stridor, rales, upper-airway obstruction, cough and hyperventilation. The authors also established specific objectives for other scenarios encountered in the practice of Pulmonology in general, namely asthma, respiratory insufficiency, chronic obstructive pulmonary disease, pulmonary embolism, pleural diseases, diseases of the mediastinum and chest wall, pneumonia, abscess, bronchiectasis, tuberculosis and interstitial pulmonary diseases. The authors include resident training in procedures such as endotracheal intubation, mechanical ventilation and thoracentesis within the corresponding objectives.

Other important aspects of resident training merit further discussion and should be continuously updated. One such aspect is resident evaluation. It is well known and accepted that periodic evaluation is the best means of determining whether a resident is making good use of the training available in relation to the previously established objectives. The rules for evaluation are laid out in article 13 of CNRM resolution 05/02. Article 6 of Law N<sup>o</sup> 6.932/81 states that residents will earn their certification and be awarded the legal title of Specialist only after duly completing the residency program and receiving the corresponding diploma.

It is recommended that the results of resident evaluations be given in writing (to be kept on file) and discussed with the resident in the presence of the coordinator and head residents. In addition to its obvious function of uncovering any deficiency the resident might have, the evaluation serves as a tool for fine tuning the residency program, often shedding light on shortcomings in the curriculum<sup>19</sup>. In the requirements for residency program accreditation established by the National Pulmonology Commission of Spain, there is a recommendation that residents be evaluated, but without the degree of detail outlined by the CNRM. However, included in the criteria put forth by the Accreditation Council for

Graduate Medical Education is the affirmation that it is imperative that residents be periodically evaluated. It is agreed that this is important in order to assess their competence in patient care, general medical knowledge, interpersonal skills, communication skills and level of professionalism, as well as whether their practical application of these skills conforms to the standards of the health care system<sup>11,12,15</sup>.

Performance-based resident evaluations, which are widely used in medical residency programs, vary in nature and in the ways in which they are applied. Most are given at the beginning, middle and end of the program, and some even allow the patient treated to participate in the process<sup>20,21,22</sup>.

Another aspect that merits discussion is linking residency program accreditation to payments of resident scholarships, as dictated in Article 4 of Law N° 6.932/81<sup>18</sup>. The amount of each scholarship is stipulated in Law N° 10.302/01. Payment of these scholarships is the responsibility of the institution offering the residency program, regardless of whether the hospital in question is public or private, and independently of whether the primary function of the hospital is teaching or patient care<sup>20</sup>. Failure to provide financing for these scholarships could result in loss of accreditation, even if all other criteria are met. The American and Spanish bodies that bestow accreditation on residency programs make no mention of resident scholarship payments. The American commission states only that the institution should provide sufficient financial support to residents, and the Spanish commission only details scholarship criteria for research grants<sup>11,12</sup>.

The current basic criteria for accreditation of residency programs in pulmonary medicine, as established by the CNRM in concert with the *Sociedade Brasileira de Pneumologia e Tisiologia* (SBPT, Brazilian Society of Pulmonology and Phthisiology), clearly represent an advance in ensuring the quality of the training offered. Despite the fact that there are 58 accredited residency programs in pulmonary medicine, most in the southeastern region, the CNRM and SBPT should work together to update the criteria to meet current demands. Particular attention should be given to obligatory internships, cooperation with the other branches of medicine and expansion of the curriculum. All parties involved would welcome SBPT proposals to alter the criteria in the interest of meeting current demands and improving the level of training.

A further objective should be the establishment of priority-based guidelines for new residency program creation, including the determination of appropriate numbers of resident positions by institution and by region. Providing adequate numbers of competent pulmonologists to meet the needs of each community, in accordance with the guidelines of the Brazilian National Health Care System, is the challenge we face.

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**TABLE 1**  
**Numbers of institutions that offer medical residency programs in pulmonary medicine and numbers of residents, by region and by class year**

Region	Institutions	R1	R2	R3	Total	% Res.
North	1		2	1	3	1.51
Northeast	7	11	9	3	23	11.61
Central-west	6	6	6		12	6.06
Southeast	35	56	55	22	133	67.18
South	9	9	11	7	27	13.64
<b>TOTAL</b>	<b>58</b>	<b>82</b>	<b>83</b>	<b>33</b>	<b>198</b>	<b>100.00</b>

Source: Executive Secretary of the CNRM, April 2003

**TABLE 2**  
**Numbers of institutions that offer medical residency programs in pulmonary medicine, by level of accreditation and by region**

Region	Provisional accreditation	Full accreditation	On probation	Total
North		1		1
Northeast	1	6		7
Central-west	1	5		6
Southeast	6	29		35
South		9		9
<b>TOTAL</b>	<b>8</b>	<b>50</b>		<b>58</b>

Source: Executive Secretary of the CNRM, April 2003