

# Exploration and Practice of Standardized Training in Respiratory and Critical Care Medicine

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**Abstract:** Based on the fact that there is a large demand for respiratory doctors in China and the number of practitioners is relatively small each year, this paper investigates and summarizes the experience of the standardized training of respiratory doctors from humanistic education, clinical thinking and operation, scientific research ability training, multidisciplinary team in the department of respiratory and critical care medicine of the Second Affiliated Hospital of Xi'an Jiaotong University in the past years. Based on the MDT participation and assessment system, the experience in standardized training is shared and the achieved good results are analyzed. The study can provide a reference for training the standardized trainees in the department of respiratory and critical care medicine in relevant hospitals in China.

**Keywords:** Standardized trainees; Training mode; Respiratory and critical care medicine

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## 1. Medical humanities education

As a qualified respiratory doctor, the basic skills are not only limited to professional knowledge, but also the recognition and love for the profession which is the most important foundation. Only when a respiratory doctor loves the profession, he/she can do his/her best to constantly improve his/her own professional proficiency, and have a good communication with patients. At the same time, since respiratory diseases are mostly chronic diseases, humanistic education and doctor-patient communication skill are one of key training goals for the medical staff. Poor communication easily leads to patients' lack of trust in doctors and would become a trigger for medical disputes. Regardless of benign or malignant respiratory diseases, most of them need repeated treatment for a long time. In addition, many elderly patients can be treated for a long time, so they could have different degrees of anxiety and depression and often become irritable and anxious during the treatment<sup>[1]</sup>. If the respiratory doctor cannot detect the psychological activity of the patient, he will not be able to communicate deeply and effectively with the patient, or lack of skills in the communication process. Hence, demonstration teaching plays a particularly important role in physical education teaching. In view of this, the department regularly hosts demonstration teaching that teachers with good communication experience demonstrate the skills of talking with simulated patients with different emotional reactions to the standardized trainees using effective and easy communication language. The demonstration teaching guides the trainees to be "patient and loving", and ultimately achieve the effective communication. In addition, the teacher personally demonstrates and communicates with the patients who are difficult to communicate so that the standardized training trainees can truly obtain the importance of the communication skills and practice them to improve their communication ability with the patients. Early humanistic training is helpful for respiratory doctors to establish good humanistic quality in early stage and enhance their adaptability in complex medical environment in the future. It is helpful for departments to establish a good doctor-patient relationship and prevent medical disputes<sup>[2]</sup>.

## 2. Clinical thinking and operation

Clinical manifestations for many kinds of respiratory diseases are complicated, diverse and theoretical knowledge extensive. It is difficult in clinical teaching of respiratory diseases to adopt a training mode to improve effectively teaching quality and efficiency, professional theoretical knowledge and professional operational skills of this discipline, and enable standardized trainees to obtain maximum benefits. At present, the most widely used method in standardized training is the method that clinical teachers use oral

language to impart knowledge in the process of clinical teaching. However, under this teaching mode, most students lack fully independent learning ability and innovative consciousness. A teaching mode that changed from passive learning to active one has been adopted in our standardized training. When a typical patient is encountered in the teaching process, the teacher will put forward practical problems concerning the diagnosis, and differential diagnosis and treatment of the patient. The trainees are taught to read relevant materials and references, and then are conducted group discussion to propose the basis of diagnosis and differential diagnosis. At the same time, the relationship between comorbidities and respiratory diseases in elderly patients is analyzed, and finally the treatment principle and detailed treatment plan were given. The teacher summarizes, comments, revises the analysis from the students through the existing inspection data. The students can achieve the ability of clinical thinking by combining theory and practice.

The diagnosis of respiratory diseases depends on the evidence of etiology and pathology. Invasive procedures, such as pleural puncture, bronchoscopy, and pulmonary vascular interventional diagnosis and treatment have become necessary skills for respiratory doctors. For the training of operational skills, we adopt a systematic training model in the process of standardized training. First, the teacher provides theoretical guidance including the structure and performance of bronchoscopes, indications and contraindications of bronchoscopy to the standardized trainees, normal anatomy of the respiratory tract, the reading level of chest imaging, to enable the standardized trainees to recognize the chest imaging structure using the mirror image structure. Secondly, simulation exercises were performed on a simulator using an electronic bronchoscope. In the operation, the technical level of lens control ability, mirror holding gesture, coordinated rotation of wrist and mirror body are constantly improved. Finally, under the strict guidance of the teacher, students are trained to complete the operation independently. After each operation, it is necessary for the standardized trainees to conduct self-analysis and summary, and accept the evaluation and guidance of the training teacher, and fully communicate with the training teacher on the difficulties and doubts in the operation. Through this systematic bronchoscopy training method, it not only improves the interest and enthusiasm of the trainees but also their operation skills.

### **3. Scientific research capacity training**

Scientific research capacity is an important part of medical work though most students do not pay enough attention to scientific research. In response to this phenomenon, scientific research ability of standardized training students is cultivated in daily medical work. A lecture is conducted by senior physicians with strong scientific research ability in the respiratory department twice a week. The lecture includes a medical progress in respiratory research, a new progress and new consensus in the diagnosis and treatment of respiratory system, and the latest scientific research trends of the disease in lung cancer, asthma, infection, intervention, etc. It also includes the latest literature report, scientific research and design. The scientific interest groups consisting of standardized training students have been set up according to their own interest direction and scientific research ability. After finishing the clinical work, the scientific research teachers will guide the standardized trainees to consult literature, write scientific research plans, declare new technologies and projects in the hospital, and collect data and write papers. They can also enter the laboratory to carry out experimental operations to gradually cultivate the comprehensive scientific research ability. The department also often hold academic lectures, academic salons and large academic conferences to create a good atmosphere for scientific research. The standardized trainees can gradually develop scientific thinking and become interested in scientific research work. After half a year of standardized training and study, standardized trainees can master certain scientific research knowledge and have some small scientific research achievements.

### **4. Multidisciplinary team (MDT) model**

MDT model is a clinical work model that has been widely used and achieved some good results in the field of diagnosis and treatment in recent years<sup>[3]</sup>. The diagnosis and treatment especially in the diagnosis and treatment of lung cancer, has evolved from surgical treatment in the past to multi-disciplinary comprehensive treatment and emphasized the close collaboration of various disciplines. Through the collaboration of multiple disciplines, MDT can accurately diagnose difficult patients and develop individualized treatment plans. It also plays an increasingly important role in standardized training<sup>[4]</sup>. The department insists on conducting MDT once a week. The standardized trainees also join the clinical professional teams of MDT, such as lung tumor, lung interstitial disease, fever of unknown cause, pulmonary nodules, besides the departments related to diseases. By attending the on-site discussions of teachers from various departments, the standardized trainees have vividly combined the theory with practice to gain a more comprehensive understanding of respiratory diseases. Accordingly, the standardized trainees can not only resolve some of the clinical problems, but also have reasoning ability, which helps to them provide more professional service for patients.

### **5. Assessment system Assessment**

Assessment system Assessment is an evaluation measure for the training effect of standardized trainees and a basis for judging

whether standardized trainees have mastered professional knowledge and skills to ensure the quality of training. Standardized trainees are required to participate in theoretical study during the half-year standardized training besides the theoretical knowledge on respiratory diseases, imaging, pathology and anatomy knowledge on systemic diseases, such as circulatory system and digestive system, etc. They re-learn to solve various clinical problems encountered in daily diagnosis and treatment to further broaden the clinical thinking horizon, and achieve comprehensive and accurate diagnosis. Assessment is the most objective evaluation of standardized trainees' ability to solve clinical problems. The assessment needs the standardized trainees to pay more attention to professional basic theories, and encourage them to take the initiative to learn more relevant knowledge. In addition, at the end of each month, the teacher assesses the grasped technologies by the standardized trainees. After the standardized training, the department will conduct a total assessment and score according to the results of the standardized trainees every month. Through the assessment, the standardized trainees' professional skills can be timely reported to the instructor, and then targeted training can be carried out on the standardized trainees according to the actual situation. Through the assessment, the training efficiency can be finally improved. The department also optimizes the assessment system every year in order to better serve the training of standardized trainees.

After more than 5 years of exploration, practice and continuous improvement, the department of respiratory and critical care medicine has established a comprehensive training system for respiratory doctors from various aspects, such as humanistic training, clinical theory and operation, scientific research ability training, MDT multidisciplinary team collaboration and participation, humanistic education, and assessment system. Aiming to improve the comprehensive quality of standardized trainees from professional ethics, professional ability, interpersonal communication ability, teamwork ability, teaching ability, scientific research ability, dozens of excellent respiratory doctors have been trained so far. After half a year of systematic training in the department, each standardized trainee has developed a good habit of independent learning, obtained scientific research consciousness, mastered certain scientific research methods, and accumulated some experiences.

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