

# ***Respiratory Medicine Senior Residency***

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## **TRAINING GUIDE**

### **(A) INTRODUCTION**

#### A. Definition and Scope of Specialty

The medical specialty of respiratory medicine (pulmonary disease) focuses on the etiology, diagnosis, prevention, and treatment of diseases affecting the lungs and related organs.

#### B. Duration of Education

The educational program in respiratory medicine (pulmonary disease) must be 36 months in length, of which 24 months will be ACGME-I accredited and the last 12 months will be JCST accredited.

### **(B) PROGRAMME OVERVIEW**

The programme consists of 2 parts. The initial 3 years of training will be in Internal Medicine (R1 to R3).

The second period of 3 years would be spent in the Respiratory Medicine Senior Residency programme (R4 to R6). Residents who are certified by their respective Programme Director (PD) and acquired the necessary competence specified for a R3 resident will be considered for promotion into Respiratory Medicine senior residency program.

The Respiratory Medicine senior residency program is a 36 months program of which:

- a) 24 months (R4 and R5) will be ACGME-I accredited and
- b) Last 12 months (R6) will be JCST accredited.

### **(C) TRAINING REQUIREMENTS at R4 & R5**

#### 1. Program Personnel and Resources

##### **A. Resources**

##### I. Facilities

- a) A pulmonary function testing laboratory must be available.

- b) A bronchoscopy suite, including appropriate space and staffing for pulmonary procedures, must be available.
- c) Critical care, post-operative care, and respiratory care services must be available.

## II. Laboratory and Imaging Services

The following must be available at the primary clinical site:

- a) a supporting laboratory to provide complete and prompt laboratory evaluation;
- b) timely bedside imaging services for patients in the critical care units;
- c) computed tomography (CT) imaging, including CT angiography; and,
- d) nuclear medicine imaging capacity and ultrasonography.

## III. Other Support Services

The following must be available:

- a) imaging services, such as positron emission tomography (PET) scan and magnetic resonance imaging (MRI);
- b) a laboratory for sleep-related breathing disorders;
- c) pathology services, including exfoliate cytology;
- d) a thoracic surgery service; and,
- e) other services, including anaesthesiology, immunology, laboratory medicine, microbiology, occupational medicine, physical medicine and rehabilitation, otolaryngology, and radiology.

## IV. Patient Population

There must be an average daily census of at least five patients per fellow during assignments to critical care units.

## 2. Fellow Appointment

### **A. Eligibility Criteria**

Prior to appointment in the program, fellows should have completed an Accreditation Council for Graduate Medical Education International (ACGME-I)-accredited core specialty program in internal medicine.

## 3. Specialty-specific Educational Program

### **A. Regularly Scheduled Didactic Sessions**

- I. Fellows must acquire knowledge regarding monitoring and supervising special services, including:
  - a) pulmonary function laboratories, to include quality control, quality assurance and proficiency standards;
  - b) respiratory care techniques and services; and,
  - c) respiratory care units.

- II. Fellows must be given opportunities to assume continuing responsibility for both acutely – and chronically-ill patients, in order to learn both the natural history of respiratory medicine (pulmonary disease), and the effectiveness of therapeutic programs.
- III. Fellows must acquire knowledge in the evaluation and management of patients with genetic and developmental disorders of the respiratory system.
- IV. Fellows should have formal instruction about genetic and developmental disorders of the respiratory system, including cystic fibrosis.

## **B. Clinical Experiences**

- I. A minimum of 12 months of education must be devoted to clinical experience.
- II. At least three months must be spent in the medical intensive care unit (MICU).
- III. At least nine months must be spent in non-critical care respiratory medicine (pulmonary disease) rotations.
- IV. Each fellow should, on average, be responsible for no more than eight-to-12 patients during each half-day ambulatory session.
- V. Fellows must have clinical experience in the evaluation and management of patients in pulmonary rehabilitation.
- VI. Fellows must have clinical experience in tobacco prevention and cessation counselling.
- VII. Fellows must have clinical experience in examining and recognizing the histologic changes of lung tissue, becoming familiar with pulmonary cytologic changes, and identifying infectious agents.
- VIII. Fellows are strongly suggested to have 18 months of clinical experience.
- IX. Fellows are strongly suggested to have a structured continuity ambulatory clinic experience that exposes them to the breadth and depth of respiratory medicine (pulmonary disease). If provided:
  - a) this experience should average one half-day each week throughout the 24 months of accredited education;
  - b) this experience must include an appropriate distribution of patients of each gender and a diversity of ages;
  - c) each fellow should, on average, be responsible for four-to-eight patients during each half-day session; and,
  - d) the continuing patient care experience should not be interrupted by more than one month, excluding a fellow's vacation.

X. Procedures and Technical Skills

- a) Each fellow must perform a minimum of 100 flexible fiber-optic bronchoscopy procedures, including those with endobronchial and transbronchial biopsies and transbronchial needle aspiration.
- b) Direct supervision of procedures performed by each fellow must occur until proficiency has been acquired and documented by the program director.
- c) Faculty members must teach and supervise the fellows in the performance and interpretation of procedures, and this must be documented in each fellow's record, including indications, outcomes, diagnoses, and supervisor(s).
- d) Fellows must be able to do central line placement.
- e) Fellows must participate in training using simulation.

XI. Fellows must have experience in the role of a respiratory medicine (pulmonary disease) consultant in both the inpatient and ambulatory settings.

4. ACGME-I Competencies

**A. Patient Care**

Fellows must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. Fellows must demonstrate competence in:

- I. the practice of health promotion, disease prevention, diagnosis, care, and treatment of patients of each gender, from adolescence to old age, during health and all stages of illness;
- II. prevention, evaluation, and management of patients with:
  - a) acute lung injury, including inhalation and trauma;
  - b) circulatory failure;
  - c) diffuse interstitial lung disease;
  - d) disorders of the pleura and the mediastinum;
  - e) iatrogenic respiratory diseases, including drug-induced disease;
  - f) obstructive lung diseases, including asthma, bronchiectasis, bronchitis, and emphysema;
  - g) occupational and environmental lung diseases;
  - h) pulmonary embolism and pulmonary embolic disease;
  - i) pulmonary infections, including tuberculous, fungal infections, atypical mycobacterial infections, and those infections in the immunocompromised host (e.g., human immunodeficiency virus (HIV)-related infections);
  - j) primary and metastatic pulmonary malignancy;
  - k) pulmonary manifestations of systemic diseases, including collagen vascular disease and diseases that are primary in other organs;
  - l) pulmonary vascular disease, including primary and secondary pulmonary hypertension and the vasculitis and pulmonary hemorrhage syndromes;
  - m) respiratory failure, including acute respiratory distress syndrome, acute and chronic respiratory failure in obstructive lung diseases, and neuromuscular respiratory drive disorders;

- n) sarcoidosis; and,
- o) sleep-disordered breathing.

III. interpreting data derived from various bedside devices commonly employed to monitor patients, as well as data from laboratory studies related to sputum, bronchopulmonary secretions, and pleural fluid;

IV. procedural and technical skills, including:

- a) airway management;
- b) diagnostic and therapeutic procedures, to include thoracentesis, endotracheal intubation, and related procedures;
- c) emergency cardioversion;
- d) flexible fiber-optic bronchoscopy procedures, to include those with endobronchial and transbronchial biopsies and transbronchial needle aspiration;
- e) insertion of arterial and central venous catheters;
- f) operation of bedside hemodynamic monitoring systems;
- g) participation in a multidisciplinary team approach in the management of pulmonary malignancies and complicated asthma;
- h) pulmonary function tests to assess respiratory mechanics and gas exchange, to include spirometry, flow volume studies, lung volumes, diffusing capacity, arterial blood gas analysis, exercise studies, and interpretation of the results of bronchoprovocation testing using methacholine or histamine;
- i) use of a variety of positive pressure ventilator modes, to include:
  - 1) initiation and maintenance of ventilator support;
  - 2) respiratory care techniques; and,
  - 3) withdrawal of mechanical ventilator support.
- j) use of chest tubes and drainage systems;
- k) use of reservoir masks and continuous positive airway pressure masks for delivery of supplemental oxygen, humidifiers, nebulizers, and incentive spirometry;
- l) use of transcutaneous pacemakers; and,
- m) use of ultrasound techniques to perform thoracentesis and place intravascular and intracavitary tubes and catheters.

## **B. Medical Knowledge**

Fellows must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, as well as the application of this knowledge to patient care. Fellows must demonstrate knowledge of:

- I. the scientific method of problem solving and evidence-based decision making;
- II. indications, contraindications, limitations, complications, techniques, and interpretation of results of those diagnostic and therapeutic procedures integral to the discipline, including the appropriate indication for and use of screening tests and procedures;

- III. imaging techniques commonly employed in the evaluation of patients with respiratory (pulmonary disease) or critical illness, including the use of ultrasound, radiography and CT of the chest, and PET scan changes for assessing pulmonary neoplasms;
- IV. the basic sciences, with particular emphasis on:
  - a) genetics and molecular biology as they relate to respiratory medicine (pulmonary disease);
  - b) developmental biology;
  - c) pulmonary physiology and pathophysiology in systemic diseases; and,
  - d) biochemistry and physiology, including cell and molecular biology and immunology, as they relate to respiratory medicine (pulmonary disease).
- V. indications, complications, and outcomes of lung transplantation;
- VI. recognition and management of the critically-ill from disasters, including those disasters caused by chemical and biological agents;
- VII. insertion of pulmonary artery balloon flotation catheters;
- VIII. the psychosocial and emotional effects of critical illness on patients and their families; and,
- IX. the ethical, economic and legal aspects of critical illness.

**C. Practice-based Learning and Improvement**

Fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning.

**D. Interpersonal and Communication Skills**

Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals.

**E. Professionalism**

Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles.

**F. Systems-based Practice**

Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.

Fellows are expected to:

- a) acquire skills required to organize, administer, and direct a critical care unit; and,
- b) acquire the skills required to organize, administer, and direct a respiratory therapy section.

*Adapted from ACGME-International Advanced Specialty Program Requirements for Graduate Medical Education in Respiratory Medicine (Internal Medicine Pulmonary Disease)*

5. Pleural Biopsies Procedures/Cases

Senior residents in Respiratory Medicine are required to fulfil at least 5 to 10 pleural biopsies throughout their senior residency training (R4 to R6).

6. National Training Programme (NTP) Session

Senior residents are required to attend structured NTP sessions that will be conducted on Tuesdays (for R4 & R5) and Fridays (for R6) and all senior residents are expected to attain a minimum of 70% attendance.

#### **(D) TRAINING REQUIREMENTS at JCST Accredited Residency Years (R6)**

In the last year of the Respiratory Medicine residency programme (R6), the senior residents will have to complete the following training requirements:

Compulsory postings:

- 2 months postings in compulsory General Medicine/Geriatric Medicine posting
- 2 months postings in Tuberculosis Control Unit (TBCU)

**Note:** Senior residents doing their 2 months of TBCU postings will be allowed up to 2 sessions (1 session = half day) off to return to their respective clinic sessions or for specialty training requirements (e.g. bronchoscopy etc.)

Elective postings:

Senior Residents may opt for **only** one of the following 3 electives:

- a. A minimum of 1 month and a maximum 3 months of protected time research – During the research period, the senior residents are required to continue their clinics. Research topics will be reviewed by the Programme Directors (PDs)
- b. A minimum of 1 month and a maximum 3 months of protected time in Special Interest / concentrated training in specific area (*ie. Sleep, bronchoscopy, lung function and et cetera*). For topics that require long period of follow-up, the RAC is agreeable to allow the senior residents to continue the follow-ups. Posting in special interest areas are subject to approval by the Head of Departments and PDs of the respective Sponsoring Institutions

- c. A minimum of 1 month and a maximum 3 months of Intensive Care Unit

Senior residents who do not opt for any of the above elective posting shall complete the remaining 8 months of training in General Respiratory Medicine (including any planned residual ICU postings, if any).

Senior residents who opt for any of the above elective posting shall complete the remaining months of training (between 5 months to 7 months) in General Respiratory Medicine (including any planned residual ICU postings, if any).

**\*Note:** *The maximum number of months that a Senior Resident can spend in ICU postings, under the General Respiratory training, is 6 months across the 3 years of senior residency traineeship. If a senior resident opt for Option C (ICU posting) as elective, the senior resident may spend up till a maximum of 9 months in ICU postings.*

Resident Competencies:

The training programme aims to achieve the desired outcomes in the 6 key competencies of patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism and system-based practice.

Senior residents are expected to fulfil the 6 key competencies during each year of their residency training as per below table:

<b>Key Competencies / Year of Training</b>	<b>R4</b>	<b>R5</b>	<b>R6</b>
<b>1. Patient Care</b>	Minimum 50% of ACGME competencies and 50% of RAC mandated procedures.	100% of ACGME competencies and 100% of RAC mandated procedures.	To complete and perform satisfactorily in 2 months of TBCU and subsequent postings in General Respiratory Medicine and chosen electives (where applicable).  To achieve 70% attendance for the structured NTP sessions.
<b>2. Medical Knowledge</b>	Minimum 50% of ACGME competencies.	100% of ACGME competencies.	To be 100% competent in TBCU, General Respiratory Medicine and

<b>Key Competencies / Year of Training</b>	<b>R4</b>	<b>R5</b>	<b>R6</b>
			chosen electives (where applicable).
<b>3. Practice-based Learning and Improvement</b>	Be able to appraise the clinical papers and utilize scientific evidence to their patients' health problems under supervision.	Be able to appraise the clinical papers and utilize scientific evidence to their patients' health problems independently.	To be 100% competent in TBCU, General Respiratory Medicine and chosen electives (where applicable).
<b>4. Interpersonal and Communication Skills</b>	Be able to lead a ward round under supervision.	Be able to lead a ward round independently.	To be able to monitor and counsel TBCU patients, General Respiratory Medicine patients and patients in chosen electives (where applicable).
<b>5. Professionalism</b>	Be able to lead a ward round under supervision.	Be able to lead a ward round independently.	To be able to monitor and counsel TBCU patients, General Respiratory Medicine patients and patients in chosen electives (where applicable).
<b>6. Systems-based Practice</b>	Initiate a Quality Improvement Project.	Complete a Quality Improvement Project.	To understand infectious control and be 100% competent in all areas for TBCU, General Respiratory Medicine and chosen electives (where applicable).

## (E) LOG OF OPERATIVE / CLINICAL EXPERIENCE

All senior residents must to keep a log of their operative / clinical experience in the designated case log system.

For senior residents in R4 and R5, they are required to use the designated electronic logging systems.

For senior residents in R6, they would be required to log their cases and procedures in a hardcopy logbook.

## (F) ASSESSMENT AND EXAMINATIONS

### I. Supervisors Assessment

The supervisor's evaluation of the senior residents should be performed at the end of every rotation using the designated form and then submitted to the RAC for review.

### II. Feedback

Senior residents should perform a yearly evaluation of teaching faculty and the training programme using the designated forms. These forms must be submitted to the RAC and kept absolutely confidential.

### III. Examinations

The following table summarizes the various assessments required across the years of residency training:

R1	R2	R3	R4	R5
As per Internal Medicine (IM) Residency Program	As per Internal Medicine (IM) Residency Program	As per Internal Medicine (IM) Residency Program	In-Training Examination (ITE) for senior residents in Respiratory Medicine	In-Training Examination (ITE) for senior residents in Respiratory Medicine

In addition, residents are required to pass the MRCP or ABIM at the end of the Internal Medicine Residency Program (R3). This is required for progression of training.

Residents are required to pass **both** MCRP **and** ABIM at the end of R4. This is required for progression of training.

## **Exit Examination**

At the end of the 36 months program and upon satisfactory completion of the Respiratory Medicine senior residency training, the senior resident must pass an exit examination.

All senior residents are required to attend the Medical Ethics, Professionalism and Health Law course before they can be certified exit from the specialty residency training.

## **(G) CHANGES IN TRAINEESHIP PERIOD AND WITHDRAWAL OF TRAINEESHIP**

### **I. Changes in Training Period**

Residency should be continuous. If a training programme is interrupted for any reason whatsoever, the RAC may at its discretion, require the resident to undergo a further period of training in addition to the minimum requirements of the programme or terminate the residency altogether. All residents are required to conform to the residency training plan as approved by the RAC. Overseas attachment during Senior Residency training is not permitted with the exception of Radiation Oncology and Neurosurgery (*refer to JCST Circular 114/14*).

### **II. Leave Of Absence**

All residents are to comply with the prevailing MOH policy on Leave of Absence.

### **III. Overseas Postings**

Overseas attachment during Senior Residency training is not permitted with the exception of Radiation Oncology and Neurosurgery (*refer to JCST Circular 114/14*).