Quality Assurance Unit

Tanta University

Faculty of Medicine

# Department of Chest

# Course Specifications

## Master Degree of Chest

## 4th semester

## 2021-2022

**aMaster Degree of Chest Course Specifications**

**University: Tanta** **Faculty: Medicine** **Department: Chest**

## A- Administrative Information

1. **Course title: M Sc. Chest Diseases 4th semester**
2. **Department offering the program: Chest Department**
3. **Department responsible for the course: Chest Department**
4. **Course code: CHEST 8007**
5. **Level: Second Part: 9 credit-hours. ( 15 weeks)**
6. **No. of Credit / taught hours:**

| The course | Obligatory hours | Practical hours | Scientific activity | Elective courses |
|---|---|---|---|---|
| Credit hours | 4 hours | 3 hours | 1 hour | 1 hours |
| Taught hours | 60 hours | 90 hours | 60 hours | 15 hours |

7. **Authorization date of course specification: 21-8-2019**

## B- Professional Information

### 1 – Overall Course aims

**Purpose of the curriculum:**

**The purpose of this curriculum is to provide the basis for training in the specialty of Chest Diseases to the level of award of a Certificate of Completion of Training. At this level, the doctor should have the knowledge, skills, attitudes and competencies to practice as an independent specialist practitioner, at Consultant level.**

**Professionalism is a difficult quality to define. One definition proposed by the Royal College of Physicians is "a set of values, behaviors' and relationships that underpin the trust that the public has in the profession." Professionalism includes the ability to deal with diagnostic and therapeutic uncertainty. Whilst this curriculum attempts to spell out the knowledge, skills attitudes and behaviors' that underpin training in Chest Diseases, the attributes which make up the "professional" specialist are much more than the simple sum of all these added together. The progression from candidate to professional requires, in addition to the simple acquisition of the building blocks**

**described in this curriculum, the development of a high degree of personal and professional maturity and this requires time, experience and the internalization by the candidate of a whole variety of attributes that he/she is exposed to in the work place. In part, this also involves learning by example, such that it is incumbent on all trainers to ensure that their candidates are exposed to appropriate work place and learning environments.**

**OBJECTIVES OF CHEST DISEASES SPECIALTY CURRICULUM:**

**The candidate will be given the opportunity to become competent in:**

**1. Establishing a differential diagnosis for patients presenting with clinical features of respiratory disease by appropriate use of history, clinical examination and appropriate investigations.**

**2. Applying knowledge derived from the appropriate basic sciences which are relevant to Chest Diseases.**

**3. Applying appropriate and sufficient knowledge and skills in the diagnosis and management of patients with respiratory disease to ensure safe independent practice at NHS independent Consultant Specialist level.**

**4. Developing a management plan for the "whole patient." This should include not only the appropriate treatment but also take into account health promotion, disease prevention, long-term management plans and palliative care medicine where appropriate.**

## 2 – Intended learning outcomes (ILOs):

### a. knowledge and understanding:

**By the, end of the 4th semester the candidate will have gained knowledge and systematic understanding of:**

**a.1. Discuss the various causes and pathogenesis of diseases in respiratory medicine.**

**a.2. Discuss the methods of promoting health and preventing diseases in respiratory medicine, including nutrition, exercise, life styles, physiological health, genetic predisposition to disease, sanitation, environmental and work place hazards, preventive pharmacology and immunization.**

**a.3. Express the clinical manifestations and differential diagnosis of respiratory diseases with an emphasis on the incidence of the different manifestations and their relative importance in establishing the diagnosis, and the early manifestations of serious diseases .**

**a.4. Explain the scientific basis and interpretation of diagnostic studies with knowledge of the study / studies of choice in any specific situation and of the accuracy of the study in establishing diagnosis.**

**a.5. Express the principles, the indications, the relative advantages and disadvantages of various therapeutic modalities including mental health care and behavioral modification, nutritional therapy, pharmacotherapy, surgery, radiotherapy, immunotherapy and physical rehabilitation as applied to common clinical situations in respiratory medicine.**

**a.5. Summarize the theories and principles that govern ethical decision making in clinical practice and the major ethical dilemmas in respiratory medicine, particularly those that arise at the beginning and the end of life and from the rapid expansion of medical knowledge and technology.**

**a.6. Discuss the physiological basis of control of breathing (central & peripheral).**

**a.7. Summarize the classification, mode of action, indications, contraindications, interactions and adverse effects of drugs used in the field of pulmonary medicine.**

**a.8. Outline the WHO International Health Regulations (2005)**

**b. Intellectual skills:**

**By the end of 4th semester the trainee will be able to:**

**(b.1.) Data acquisition:**

**b.1.1. Obtain and document a complete and a focused medical history for a patient with respiratory disease.**

**b.1.2. Perform and document a complete and a focused physical and mental status examination for a patient.**

**b.1.3. Perform an emergency - directed examination for patients with common respiratory emergencies.**

**b.1.4. Utilize sources of information in addition to the patient interview to augment the medical history. Such sources include family or friends, medical records and other health care professionals.**

**b.1.5. Identify anatomic landmarks on postmortem specimens**

**b.1.6. Interpret results of physiologic tests such as pulmonary function tests, arterial blood gases and electrolyte analysis.**

**b.1.7. Take a relevant history of a patient's medication regimen**

**(b.2.) Data analysis and problem solving:**

**b.2.1. Interpret patient symptoms and physical findings in terms of their anatomic, pathologic and functional diagnostic significances.**

**b.2.2. Identify problems, prioritize them, and generate a list of initial diagnostic hypotheses (differential diagnosis) for each problem.**

**b.2.3. Select the most appropriate and cost effective diagnostic and therapeutic producers for each problem.**

**b.2.4. Interpret the results of diagnostic procedures.**

**b.2.5. Use the results of all tests ordered to modify the problem list and the differential diagnosis accordingly.**

**b.2.6. Combine the clinical and investigational database, with the evidence based knowledge in clinical problem solving.**

**b.2.7. Clinical assessment of different cardiac, renal and hepatic diseases and their impact on the chest.**

**(b.3.) Skills related to treatment strategies:**

**b.3.1. Recognize patients with immediately life-threatening conditions and institute appropriate initial therapy.**

**b.3.2. Recognize patients with serious conditions requiring critical care and institute course of management according guide lines available.**

**b.3.3. Design and apply rational therapeutic strategies for both acute and chronic conditions that take into account the various variables that influence these strategies.**

**b.3.4. Deal with complications of respiratory diseases.**

**b.3.5. Identify and manage patients with chronic conditions requiring long term follow-up, rehabilitation, or relief of pain.**

**b.3.6. Achieve consensus with the patient or the patient's relatives on the treatment plan selected.**

**b.3.7. Monitor the effectiveness of therapy by identifying clinical and investigative parameters to be used in assessing the patient's response to treatment and re-evaluate management plan accordingly.**

**c. Professional and practical skills :**

**By the end of the 4th semester the trainee will be able to:**

**(c.1.) Communication skills:**

**(c.1.1.) Patient- doctor relationship**

**c.1.1.1. Apply respect to all patients irrespective of their socioeconomic levels, culture or religious beliefs and use language appropriate to the patient's culture.**

**c.1.1.2. Conduct patient interviews that are characterized by patience and attentive listening.**

**c.1.1.3. Explain to the patient or the patient's relatives the nature of illness, the diagnostic plan, the treatment options and the possible complications in such a way that is easily understood, answers patient's questions,encourages discussion and promotes the patient's participation in decision making.**

**c.1.1.4. Write clear concise patient records: admission sheet, progress notes, physician orders, and referrals for consultation, discharge summary and follow-up notes.**

**c.1.1.5. Use appropriate skills and strategies of communication during difficult situations such as giving bad news and dealing with angry patients.**

**c.1.1.6. Discuss medical errors or professional mistakes honestly and openly in a way that promotes patient trust and self-learning.**

**(c.1.2.) Relation to collaboration with healthcare professionals:**

**c.1.2.1. Communicate effectively with other health care professionals to maximize patient benefits and minimize the risk of errors.**

**c.1.2.2. Respect the role and contributions of other health care professionals regardless of degree or occupation.**

**c.1.2.3. Undertake appropriate formal and informal consultations with colleagues and perform appropriate referrals to other health care professionals.**

**c.1.2.4. Write a concise and informative report on patient(s) conditions.**

**c.1.2.5.Work effectively as a member or a leader of an interdisciplinary team, and acquire the ability to develop and apply management plans for patients in collaboration with the members of the team.**

**c.1.2.6. General measures to reduce spread of infection in hospital wards**

**d. General and transferable skills:**

**by the end of the 4th semester the trainee will be able to**

**(d.1.) Life-long learning:**

**d.1.1. Show commitment to life-long self-learning.**

**d.1.2. Use the sources of biomedical information to remain current with advances in knowledge and practice.**

**d.1.3. Frame a question, search the literature and utilize the obtained information to solve a particular clinical problem or plan management of an individual patient according to the principles of Evidence-Based Medicine.**

**d.1.4. Know the principles of critical Appraisal of scientific research.**

**(d.2.) Ethical behavior:**

**d.2.1. Identify alternatives in difficult ethical choices, analyze considerations supporting different alternatives and formulate course of action that takes account of this ethical complexity.**

**d.2.2. Behave towards patients in a manner consistent with the ideals of profession by consistently doing the following:**

**d.2.3. Treat the patient as a person, not a disease, and understand that the patient is a person with beliefs, values, goals and concerns which must be respected.**

**d.2.4. Respect the patient's dignity, privacy, information confidentiality and autonomy.**

**d.2.5.Deliver care in a way that will allow the patient to feel he / she has received medical care in a caring, compassionate and human manner.**

**d.2.6. Maintain honesty and integrity in all interactions with patients, patient's families, colleagues and others with whom physicians must interact in their professional lives.**

**d.2.7. Maintain a professional image in manner, dress, speech and interpersonal relationships that is consistent with the medical profession's accepted contemporary standards in the community.**

**d.2.8. Be responsible towards work and in emergency situations.**

**d.2.9. Advocate the patient's interests over ones' own interests.**

**d.2.10. Provide care to patients who are unable to pay.**

**d.2.11. Recognize and effectively deal with unethical behavior of other members of the healthcare team.**

**d.2.12. The trainee should consider the cost implications of cost benefit of various treatment modalities.**

**(d.3.) skills related to social and community context of healthcare:**

**d.3.1. Define the Egyptian healthcare system and the community based resources and services and properly-utilize them to provide high quality and cost-effective patient and community care.**

**d.3.2. Participate actively in health promotion, disease prevention.**

**d.3.3. Deal appropriately with a specific community health problem**

## 3-Course contents

**1. Obligatory hours**

**4 credit hours = 60 taught hours distributed as follows:**

| | |
|---|---|
| **1 Respiratory failure** | **8 hours** |
| **2 Sleep related breathing disorders** | **8 hours** |
| **3 Intensive care and high dependency care units** | **8 hours** |
| **4 Pulmonary exercise physiology and pulmonary rehabilitation** | **6 hours** |
| **5 Home care (hospital at home and early discharge schemes)** | **4 hours** |
| **6 Palliative care** | **4 hours** |
| **7 Pulmonary function testing** | **8 hours** |
| **8 Patient oriented approach according to symptoms and signs** | **6 hours** |
| **9 Psychological factors and quality of life in respiratory diseases** | **4 hours** |
| **10 Respiratory epidemiology** | **4 hours** |

**2. Practical training:**

**3credit hours =Total 90 hours .**

**Clinical problems that must be observed, managed under supervision & managed independently by Pulmonary Medicine candidate**

| |
|---|
| **Acute respiratory failure** |
| **Critically ill patient with acid – base disturbance** |
| **Sleep related breathing disorders** |
| **Cardio-pulmonary resuscitation** |
| **Chest Cases who are prepared for pulmonary or non-pulmonary surgery** |

**3. Scientific activity**

**1credit hour =Total 60 hours.**

**a- Seminars and bedside teaching:**

**1 taught hour /week**

**b- Workshops, Congresses, Thesis discussion and Chest conferences (Those which have credit hours will be accepted as it is).**

**c- Practical procedures:**

**Each procedure has 1 scientific hour.**

**The candidate should fulfill at least 10 different procedures.**

| Procedure/ Investigation | Level of participation | Level of Competence |
|---|---|---|
| Spirometry | Interpret & report | III |
| ABG | Attend &Interpret<br>Perform | III |
| Thoracocentesis | Attend<br>Perform | III |

| Procedure/ Investigation | Level of participation | Level of Competence |
|---|---|---|
| FOB: BAL | Attend<br>Assist<br>Perform | III |
| FOB: NB | Attend<br>Assist<br>Perform | II |
| Non invasive ventilation | Attend<br>Assist<br>Perform | III |
| Invasive ventilation | Attend<br>Assist | II |
| Endotracheal intubation | Attend & assist<br>Perform | II |
| Polysomnography& Sleep studies | Attend<br>Perform | II |
| Pulmonary rehabilitation & physiotherapy | Attend & assist<br>Perform | III |
| Nutritional support in ICU | Attend & assist<br>Perform | III |
| CXR & CT | Interpret & report | III |
| Thoracoscopy | Attend & observe | II |
| Intercostal intubation & pleural biopsy | | |

| Procedure/ Investigation | Level of participation | Level of Competence |
|---|---|---|
| | Attend & observe | II |
| ECG & Echocardiography | Perform & interpret<br>Attend & interpret | III<br>II |
| Rigid bronchoscopy | Attend & observe | II |
| Cardio-pulmonary resuscitation | Attend & assist<br>Perform | III |
| Advanced pulmonary functions | Attend & observe<br>Interpret | II |

**Definition of the levels of competence**

**Level I: Experience of selecting the appropriate diagnosis modality & interpreting the results or choosing an appropriate treatment for which the patient should be referred. This level of competence does not include performing a technique.**

**Level II: Practical experience, but not as an independent operator (has assisted in or performed a particular technique under the guidance of a superior staff).**

**Level III: Is able to independently perform the technique or procedure unaided.**

## 4-Teaching and learning methods:hybride

**The following methods of teaching and learning will be used in fellowship of Pulmonary Medicine training program**

**1) Apprenticeship learning (experiential learning):**

- **Observation b-1,b-2,b-3**
- **Assisting b-2, b-3, d-3**
- **Participation c-1, d-3**
- **Supervised Performance d-1,d-2, d-3**
- **Independent Performance b-1,b-2,b-3 ,c-1,d-1,d-2,d-3.**

**2) Formal Teaching: online lecturer Practical:attendance**

- **Lectures a-1, a-2,a-3.**
- **Seminars a-4, a-5, a-6, a-7.**
- **Clinical ward rounds b-1,b-2,b-3 ,c-1,d-1,d-2,d-3**
- **Crash courses**
- **Workshops. d-1, d-2, d-3.**

**3) Self study**

- **Library a 1- 10**
- **Textbook a 1- 10**
- **Journals d-1, d-2, d-3.**
- **Internet b-1,b-2,b-3,d-1,d-2,d-3**

**4) Meetings and Conferences c-2, d-1,d-2,d-3**

**5) Supervised Research b-1,b-2, c-2, d-1**

## 5-Student Assessment: may be electronic but inside the faculity(face to face)

**The general rules and regulations of assessment approved by Tanta University.**

**<u>The end semester exam:</u>**

**In addition to the successful completion of the training program, all candidates must successfully pass the end semester exam in the form of …….**

## 6-List of references

**6.1 Course notes**

**6.2 Text book**

**Fishmann's Chest Diseases**

**Murray Pulmonary Medicine**

**Crofton and Douglas Pulmonary Medicine**

**6.3 Recommended books**

**6.4 Periodicals and web site**

**American Review Respiratory and Intensive Care Medicine**

**European Respiratory Journal**

**Chest**

**Thorax**

**7-Other resources/ facilities required for teaching and learning to achieve the above ILOs**

**None**

**8-we certify that all of the information required to deliver this course is contained in the above specifications and will be implemented**

We verify that the above Course and the analysis of students and external evaluator opinions are accurate.

Course coordinator and head of department
name……..signature……Date……

Head of quality assurance unit:
name……..signature……Date……

**The ILOs of the 4th semester course specifications included in the appendix are integral part of this course program.**

**Appendix**

**A. Clinical ILOs**

**1 Breathlessness**

**Objective**

**Be competent to carry out specialist assessment of severity and form a structured differential diagnosis leading to appropriate further investigation and management**

**Candidate must have experience (minimum of 2 years) in dealing with patients presenting with**

**ochronic symptoms in outpatient department**

**oacute symptoms in acute/emergency admissions unit**

**Be able to manage the breathless patient effectively**

**Knowledge**

**Causes of breathlessness**

**Differentiate cardiac, respiratory, neuromuscular and metabolic causes**

**Know and understand pathogenesis of causes**

**Know and understand management/treatment**

**Pharmacology of drugs used**

**Relevant guidelines**

**Skills:**

**Performance and interpretation of spirometry (competence)**

**Interpretation of other appropriate Lung Function Tests (competence)**

**Interpretation of Chest Radiology:**

**- Chest X-Ray**

**- V/Q scans**

**- Chest CT scans (competence))**

**Performance and interpretation of arterial blood gases (competence)**

**Use of inhaled and nebulised drug therapy (competence**

**2 Cough**

**Objective**

**Be competent to carry out specialist assessment and form a structured differential diagnosis of causes leading to appropriate further investigation and management**

**Candidate must have experience in assessing patients referred to the outpatient department with cough (minimum of 2 years)**

**Be able to manage the patient with cough effectively**

**Knowledge**

**Causes of cough with:**

**oNormal CXR**

**oAbnormal CXR**

**How to formulate an appropriate differential diagnosis**

**Appropriate investigation of cough, including specialist studies**

**ENT causes**

**Management/treatment of cough linked to underlying diagnosis**

**Pharmacology of drugs used**

**Relevant guidelines**

**Skills:**

**Performance and interpretation of spirometry.**

**Interpretation of other appropriate Lung Function Tests**

**Interpretation of Chest Radiology**

**Special investigations, including bronchoscopy**

**Use of inhaled and nebulised drug therapy.**

**3 Haemoptysis**

**Objectives**

**Be competent to undertake specialist assessment and form a structured differential diagnosis in patients with haemoptysis leading to appropriate further investigation and management**

**Candidate must have experience of patients presenting with:**

**ohaemoptysis in outpatient setting**

**oacute severe haemoptysis in acute/emergency admissions unit setting (minimum of 2 years)**

**Be able to manage the patient with haemoptysis effectively**

**Knowledge**

**Causes of haemoptysis**

**How to assess severity and formulate diagnostic strategy**

**How to formulate management plan, appropriate to degree of urgency**

**Need for interventional radiology/surgery**

**Relevant guidelines**

**Skills:**

**Interpretation of Chest Radiology**

**Bronchoscopy**

**Resuscitation, including basic airway skills**

**4 Pleuritic Chest Pain**

**Objectives:**

**Be competent to undertake specialist assessment and form structured differential diagnosis in patients with pleuritic chest pain**

**Candidate must have experience in dealing with patients presenting with**

**ochronic symptoms in outpatient department**

**oacute symptoms in acute/emergency admissions unit**

**(minimum of 2 years)**

**Be able to manage the patient with pleuritic chest pain effectively**

**Knowledge:**

**Causes of pleuritic chest pain**

**Understand pathogenesis of causes**

**Differential diagnosis of causes**

**How to formulate a plan of investigation, including appropriate use of ultrasound, closed and CT-guided pleural biopsy and Medical Thoracoscopy**

**Treatments and Management**

**Pharmacology of drugs**

**Relevant guidelines**

**Skills:**

**Interpretation of Chest Radiology including Chest XRay, V/Q scans, CT scans, CTPA scans**

**Pleural biopsy**

**Ultrasound**

**Medical Thoracoscopy (knowledge of; some candidates may gain experience in.**

**5 Abnormal Chest X-Ray**

**Objectives:**

**Be competent to assess and form differential diagnosis in patients with:**

**olocalized abnormalities on chest x-ray, for instance mass lesions**

**odiffusely abnormal chest x-ray, for instance interstitial pulmonary fibrosis**

**Candidate must have experience in dealing with patients presenting with the following throughout training:**

**oabnormal chest x-ray in outpatient department**

**oabnormal chest xray in acute/emergency admissions unit**

**Be able to formulate an appropriate plan for investigation and management**

**Knowledge:**

**Causes of abnormal Chest X-Ray**

**Differential diagnosis of causes**

**Know and understand pathogenesis of causes**

**Know how to formulate plan for further investigation and management**

**Skills:**

**Interpretation of Chest Radiology**

**B. Practical Procedures ILOs**

**1 – Advanced Life Support**

**Objectives:**

- **Be competent to carry out and supervise effective resuscitation**

**Knowledge:**

- **Causes of cardiopulmonary arrest**
- **Principles of cardio-pulmonary resuscitation**
- **Organ donation issues**
- **Relevant guidelines**

**Skills:**

- **Be proficient and competent in basic and advanced life support**
- **Be proficient and competent in the use of defibrillators**
- **Be competent in judging when ALS is not appropriate**
- **Candidates must pass the ALS (UK)**
- **Candidates' JRCPTB training portfolio/DOTS must show they have performed successful resuscitation**

**2 – Respiratory Physiology and Lung Function Testing**

**Objectives:**

- **Have knowledge and experience of all lung function tests**
- **Be competent in performing simple lung function tests; have experience of the performance of more complex tests**
- **Be competent in interpreting all lung function tests**
- **Candidates must care for inpatients and outpatients having lung function tests during clinical placements (minimum 2 years)**

**Knowledge:**

- **Theory of simple spirometry and flow-volume loops**
- **Theory of measurement of static lung volumes and gas transfer**
- **Theory of body plethysmography**
- **Assessment of airway hyperresponsiveness**
- **Hypoxic challenge/fitness to fly tests**

**Exercise testing (exercise induced bronchoconstriction, six minute walk, shuttle walk tests, cardiopulmonary exercise tests)**

**Respiratory muscle assessment**

**Relevant guidelines**

**How to set up/supervise the running of a lung function laboratory**

**Relevant infection control, quality control and safety at work issues**

**Skills:**

**Be able to perform and interpret simple lung function tests, including spirometry and arterial/capillary blood gases**

**Have knowledge and experience (but not competence) of the performance of all the other lung function tests listed under knowledge section**

**Interpretation of all lung function tests (competence)**

**<u>3 – Sleep Studies</u>**

**Objective**

**Have experience of screening studies, multichannel studies and polysomnography**

**Be competent in the interpretation of screening studies**

**Have experience of the interpretation of multi-channel studies and polysomnography**

**Be competent in the initiation of CPAP and NIV**

**Knowledge**

**Causes of sleep breathing disorders**

**Methods of screening for sleep breathing disorders**

**Multi-channel studies**

**Polysomnography**

**CPAP, including auto-titration, and NIV**

**Relevant guidelines**

**Skills**

**Perform and interpret screening sleep studies (competence)**

**Interpret multichannel sleep studies (experience)**

**Interpret polysomnography (knowledge)**

**Initiate CPAP and NIV (competence)**

**Initially candidate will be under the supervision of a senior colleague skilled in the performance of these techniques and then will perform/interpret independently**

**4 – Non-invasive Ventilation and CPAP**

**Objective**

**Be competent in initiating CPAP and NIV**

**Knowledge**

**Indications for CPAP and NIV**

**How to set up and train a patient to use the equipment**

**Importance of input form physiotherapist/other health care professionals**

**Methods available**

**Relevant guidelines**

**Skills**

**Set up patients on CPAP and NIV. The candidate should be supervised until signed off as competent by the Educational Supervisor**

**Document sufficient patients in training portfolio/DOTS**

**5 – Intensive Care (ICU) and High Dependency Units (HDU)**

**Objective**

**Be competent to recognize patients who will benefit from intensive care or high dependency units**

**Have knowledge and experience of the care provided in intensive care and high dependency units**

**Candidate may care for inpatients in ICU and HDU during their clinical placements. Candidate must also spend at least 60 working days in an intensive care unit approved by the Regional Chest Diseases STC/PD. Ideally this should occur in one block. If this is not possible, 4 units of 15 consecutive working days is acceptable**

**Candidates may have to be seconded to a specialized unit to gain experience as this is not available in all placements**

**Knowledge**

**Conditions requiring ICU and HDU, particularly Acute Respiratory Distress Syndrome (ARDS) and septic syndromes**

**Knowledge of measures used to monitor and support all vital organ systems in an intensive care unit**

**Requirements for an adequately staffed and equipped unit**

**Interaction of anaesthetists physicians, surgeons, nurses, microbiologists, physiotherapists, dieticians**

**Role of the multidisciplinary team in ICU and HDU**

**Knowledge of the interface between ICU/HDU and the general/specialty wards, including outreach services**

**Relevant guidelines**

**Skills**

**ALS skills (competence)**

**Basic airway skills (competence)**

**Ability to advise on and manage respiratory patients on ICU and HDU (competence)**

**Ability to advise on the respiratory care of general patients on ICU and HDU (competence)**

**Ventilatory support modalities (competence in C-PAP and NIV; experience of mechanical ventilation and mechanical ventilation strategies)**

**Chest drain insertion (competence)**

**Bronchoscopy (competence)**

**C. Obligatory ILOs**

**1: Respiratory failure (RF)**

**Knowledge**

**• Definition, classification and aetiology of acute and chronic respiratory failure (acute respiratory distress syndrome, obstructive lung disease, neuromuscular disease, chest wall diseases, other restrictive diseases)**

**• Epidemiology and pathophysiology of RF**

**• Relevant investigations: non-invasive (chest x-ray, ultrasound, fluoroscopy, CT, nuclear techniques, pulmonary function tests) and invasive (bronchoscopy)**

**• Relevant therapeutic measures such as systemic/inhaled drug therapy, oxygen therapy, ventilatory support, cardio pulmonary resuscitation, endobronchial therapy, intercostal tube drainage, treatment of sepsis and multi-organ failure)**

**Skills**

**• Application of the above knowledge**

**• Ultrasound**

**• Evaluation of functional status**

**• Bronchoscopy**

**• Systemic and inhaled drug therapy**

**• Ventilatory support**

**• Management of barotrauma**

**Behaviour and attitudes**

**• Multidisciplinary approach**

**• End of life management**

**2: Sleep-related breathing disorders (SRD)**

**Knowledge**

**• Definition, classification and aetiology of obstructive sleep apnoea syndrome (OSA), central sleep apnoea syndrome (CSA), periodic breathing (PB), obesity hypoventilation syndrome (OHS), periodic limb movement disorder and parasomnias**

**• Epidemiology and pathophysiology of OSA,CSA,PB,OHS**

**• Epidemiology, pathophysiology and aetiology of daytime hypersomnolence**

**• Relevant investigations (including screening over-night oximetry and sleep studies (respiratory polygraphy and polysomnography))**

**• Complications of OSA, CSA, PB, and OHS**

**• Methods of treatment (including ventilatory support and CPAP)**

**• Pharmacology of drugs used**

**Skills**

**• Application of the above knowledge**

**• Non-invasive imaging modalities: chest x-ray, cephalometry, CT, MR**

**• Pulmonary function tests**

**• Sleep studies (screening over-night oximetry, respiratory polygraphy and polysomnography)**

**• Management of SRD (including treatment with CPAP)**

**• Organisation of services for SRD**

**Behaviour and attitudes**

**• Multidisciplinary team approach**

**<u>3: Intensive care and high dependency care units</u>**

**Knowledge**

**• Definition and classification of conditions leading to a requirement for respiratory intensive care and high dependency care (including end-stage diseases)**

**• Definition and classification of principles and modes of ventilatory support**

**• Equipment used in intensive care and high dependency care units**

**• Respective place of intensive care versus high dependency care in patient management**

**• Indications for ventilatory support in endstage diseases**

**• Indications for tracheostomy**

**• Complications of laryngeal intubation, tracheostomy, non-invasive ventilation, and mechanical ventilation**

**• Pharmacology of drugs used**

**• Indication for surfactant therapy**

**Skills**

**• Mechanical ventilatory support and its monitoring (invasive and non invasive)**

**• Intubation**

**• Tracheostomy**

**• Management of complications associated with mechanical ventilation (airways, barotraumas, infection, haemodynamic dis**

**turbances)**

**• Non-invasive imaging modalities: chest x-ray, ultrasound, CT, fluoroscopy,**

**nuclear techniques**

**• Palliative care**

**Behaviour and attitudes**

**• Multidisciplinary team approach**

**<u>4: Pulmonary exercise physiology and pulmonary rehabilitation</u>**

**Knowledge**

**(a) Pulmonary exercise testing**

**• Physiological basis of exercise in health**

**• Pathophysiology of exercise in disease**

**• Equipment used in pulmonary exercise testing and how it functions**

**• Personnel involved, and their training**

**• Quality control and assurance of exercise testing**

**(b) Pulmonary rehabilitation**

**• Physiology and pathophysiology underpinning pulmonary rehabilitation**

**• Evidence supporting a role for pulmonary rehabilitation in the management of patients with COPD and other appropriate respiratory diseases**

**• Components of a successful pulmonary rehabilitation programme**

**• Personnel required to set up and run a successful pulmonary rehabilitation service**

**• Selection of patients who are most likely to benefit from pulmonary rehabilitation**

**• Cost of setting up a pulmonary rehabilitation programme and its cost effectiveness**

**• Development and presentation of a business case for pulmonary rehabilitation**

**• Quality control and assurance of pulmonary rehabilitation**

**• Smoking cessation methods**

**Skills**

**• Performance and interpretation of spirometry**

**• Interpretation of other lung function tests**

**• Supervision of pulmonary exercise testing and interpretation of results**

**Behaviour and attitudes**

**• Appreciation of the impact of severe COPD and other lung diseases on the life of the patient, including work, driving, sex and exercise**

**• Non judgmental as to cause**

**• Multidisciplinary approach**

**5: Home care (hospital at home and early discharge schemes)**

**Knowledge**

**• Benefits of home care/early discharge schemes**

**• Equipment and personnel required**

**• Cost effectiveness**

**• Selection of patients who will benefit from home care/early discharge**

**• Preparation of Home Care package**

**• Organisation of Home Visits by healthcare professionals**

**• Management when home care fails**

**• Development and presentation of a successful patient selection case for home care/early discharge**

**• Quality control and assurance**

**Skills**

**• Systemic/inhaled drug therapy**

**• Oxygen therapy**

**• Non-invasive ventilatory support**

**• Care of tracheostoma**

**• Care of pleural drainage**

**Behaviour and attitudes**

**• Respecting patient preference**

**• Multidisciplinary team approach**

**• Good organisational skills**

**• Good team leading skills**

**6: Palliative care**

**Knowledge**

**• Indications for palliative care in both malignant and non malignant respiratory disease**

**• Selection of patients who will benefit from palliative care**

**• Importance of timing and forward planning**

**• Practice of palliative care**

**• Drugs**

**• Oxygen**

**• Personnel**

**• Appropriate physical environment**

**• Importance of team work**

**• Legal and ethical issues**

**Skills**

**• Recognising who will benefit**

**• Breaking bad news**

**• Communicating with patients and relatives honestly and sensitively**

**• Communicating with the palliative care team**

**Behaviour and attitudes**

**• Empathy, sensitivity and good communication skills**

**• Team work**

**• Non judgmental approach**

**• Providing for the spiritual needs of the patient when indicated**

**<u>7: Pulmonary function testing</u>**

**Knowledge**

**• Relationship between structure and function**

**• Ventilation and mechanics of breathing**

**• Principles of plethysmography**

**• Bronchial hyper-responsiveness**

**• Diffusion**

- **Blood flow**
- **Alveolar air equation**
- **Ventilation-perfusion relationships**
- **Control of ventilation**
- **ECG and echocardiography**
- **Cardio-pulmonary relationships**
- **Respiratory physiology during exercise and at altitude**

**Skills**

- **Performance, supervision and interpretation of spirometry**
- **Performance, supervision and interpretation of pulse oximetry**
- **Interpretation of plethysmography**
- **Interpretation of single breath diffusing capacity**
- **Interpretation of shunt measurement tests**
- **Performance, supervision and interpretation of cardio-pulmonary exercise testing**
- **Performance, supervision and interpretation of ECG and echocardiography**
- **Performance, supervision and interpretation of respiratory muscle function tests**
- **Performance, supervision and interpretation of bronchial provocation testing**
- **Arterial puncture and interpretation of blood gas analysis**
- **Interpretation of flight/altitude assessment results**
- **Fluoroscopy**
- **Lung compliance measurement**
- **Evaluation of impairment/disability**

**Behaviour and attitudes**

- **Appreciate importance of quality control**
- **Learn to check results of individual tests for consistency**

**8: Patient-oriented approach according to symptoms and signs**

**Knowledge**

**• Potential causes of dyspnoea, wheeze, stridor, hoarseness, cough, sputum production, haemoptysis, chest pain, snoring and general symptoms of disease**

**• Potential causes of abnormal examination findings, such as cyanosis, finger clubbing, chest wall deformities, abnormal breathing patterns, superior vena cava syndrome,Horner's syndrome and abnormal findings on inspection, palpation, percussion and auscultation**

**• Paraneoplastic syndromes**

**• Underlying pathological processes leading to abnormal respiratory symptoms and signs**

**• Appropriate approach to the investigations of patients presenting with abnormal respiratory and general symptoms and signs**

**Skills**

**• Application of the above knowledge**

**• Interpretation of history, examination and investigation findings and ability to create a list of appropriate differential diagnoses**

**• Appropriate investigation of a patient with respiratory and general symptoms and/or signs and ability to interpret these investigations**

**• Ability to address patient concerns related to respiratory symptoms and signs**

**Behaviour and attitudes**

**• Multidisciplinary approach**

**<u>9 - Psychological factors and quality of life in respiratory diseases</u>**

**Knowledge**

**• Hyperventilation syndrome**

**• Relationship between quality of life, social deprivation and respiratory disease, in particular COPD and tuberculosis**

**• The social isolation caused by COPD, lung cancer and tuberculosis**

**• Effects of psychological morbidity on symptom complexes and treatment compliance**

**• Clinical features and drug treatment of psychiatric syndromes**

**• Non-pharmacological management of psychological morbidity**

**• End of life management**

**Skills**

- **History-taking in relation to psychological morbidity**
- **Identification of depression and anxiety states**
- **Use of tools to measure quality of life e.g. St George's Respiratory Questionnaire**
- **Use of tools to measure psychological morbidity e.g. Hospital Anxiety and Depression Score**
- **Appropriate referral to psychologist or psychiatrist**
- **Appropriate referral to liaison nurses for domiciliary support**

**Behaviour and attitudes**

- **Sympathetic and non-judgmental approach to patients**
- **Willingness to provide social support**
- **Periodic review in cases of social isolation**

**10: Respiratory epidemiology**

**Knowledge**

- **Definition and classification of epidemiology (e.g. analytical, environmental, etc.) and public health**
- **Study design**
- **Disease occurrence measures**
- **Exposure measures**
- **Questionnaires**
- **Functional indices**
- **Biomarkers**
- **Determinants/risk factors**
- **Risk measures**
- **Basic statistical analyses**
- **Inference/interpretation**
- **Introduction to gene - environment interactions**

**All the examples will be issued by real data on respiratory diseases**

**Skills**

**• Application of the above knowledge**

**• Ability to apply a study design to a research question**

**• Ability to implement, administer and**

**analyse a questionnaire**

**• Ability to think and act in a standardized way**

**• Ability to interpret epidemiological measures (e.g. prevalence rate, odds ratio, relative risk, attributable risk…)**

**• Ability to make and interpret simple statistical analyses (e.g. Chi squared test, analysis of variance, multiple logistic regression…)**

**• Ability to perform and interpret simple gene**

**- environment interactions**

**• Knowledge of the epidemiology (distribution and aetiology) of the major respiratory diseases**

**Behaviour and attitudes**

**• Multidisciplinary approach (cooperation with biostatisticians and public health administrators)**

**• Knowledge of relevant diseases processes**

**• Commitment to regular personal updating of the evolving pattern of environmental and host-related risk factors**

**• Applying the principle of precaution**

**• Reading WHO and related documents**

**• Develop a preventative mentality**