European Diploma in Thoracic Imaging (ESTI Diploma)

European Board of Thoracic Imaging

Endorsement requested from the European Society of Radiology (ESR) for a period of three years

1. Aim(s) and target group

The European Society of Thoracic Imaging (ESTI) introduced the 'European Diploma in Thoracic Imaging' (ESTI Diploma) with the beginning of 2019. This diploma shall be a common European qualification for thoracic radiology imagers and will help to standardise training and expertise in thoracic imaging across Europe. The ESTI Diploma is endorsed by the European Society of Radiology (ESR).

The European Society of Thoracic Imaging (ESTI) aims to unify and offer the acquisition of thoracic imaging competencies and certificates. Consequently, a curriculum for the European Diploma in Thoracic Imaging (ESTI Diploma) was developed as concrete implementation of the ESR European Training Curriculum (ETC) for Subspecialisation in Radiology (Level III) for chest radiology using the Six-Step Approach by Kern [1]. As the curricula of both ETC Level III and ESTI Diploma have a modular structure based on anatomical regions, the learning objectives were also grouped this way.

2. Eligibility criteria

Applicants for the European Diploma in Thoracic Imaging must fulfil several requirements and provide documents as follows:
(If applicable an English translation must also be provided in addition to original documentation)

a) Application form

The completed application form must be submitted to the ESTI Office.

b) Training in radiology

Applicants have to prove at least five years of national training in radiology. A certificate of completed training needs to be provided.
For candidates with less than five years of training, a proof of experience, as a supervised staff radiologist is required.

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c) Subspecialty training

At least two years of subspecialty training or equivalent experience, following radiology certification, is required. A subspecialty training during the residency period does not fulfil the training requirement for a diploma. A signed letter from the head of department/programme director has to be provided.

d) Proof of practice

Diplomas may only be awarded to fully trained, licensed, and practicing radiologists. Specialists from other fields and radiologists no longer in practice are specifically excluded from being granted the ESR-endorsed ESTI diploma. For the purposes of this requirement, a proof of practice has to be provided.

e) RIS documentation/Logbook

A total record of the candidate's experience in thoracic imaging countersigned by the candidate's programme director is required (at least two years of subspecialty clinical practice/training certified by the programme director).

f) Letter of support

A letter of support from the head of department/programme director is required.

g) CME credits

At least 50 CME credits in thoracic imaging, recognised by ESTI, are required (e.g., ESTI recommends the European Congress of Radiology – ECR).

h) Curriculum vitae

A curriculum vitae (CV) has to be provided.

i) ESTI and ESR membership

Applicants have to be active full or corresponding radiologist members in good standing of ESTI and ESR, in the year(s) of application and examination.

j) Events

Candidates have to attend a minimum of three (3) ESTI annual meetings in five (5) years prior to the examination. Please send the respective confirmations of attendance to the ESTI Office.

k) Webinars/Workshops

ESTI recommends to attend its webinars and workshops to get continuous education and training for the diploma.

3. Knowledge base

The knowledge base is in line with the European Training Curriculum for Subspecialisation in Radiology (Level III) published by ESR in March 2020 (https://www.myesr.org/education/training-curricula). Furthermore, the knowledge base from level I and level II are presumed to be known, and may also be tested in the exam.

KNOWLEDGE

• To have an in-depth working knowledge of common respiratory diseases/disorders, including:
  - » Infections of the lungs and pleura
  - » Tumours (benign and malignant of the lungs, pleura, mediastinum and chest wall and vessels)
  - » Airways diseases
  - » Pleural disorders
  - » Diffuse parenchymal lung diseases
  - » Thoracic disorders caused by trauma
  - » Pulmonary disorders in critically-ill patients
  - » Pulmonary disorders occurring following surgery
  - » Congenital disorders of the lungs, airways and mediastinum
  - » Pulmonary (including bronchial arterial) and aortic vascular diseases
  - » Iatrogenic (post-surgical, drug- or radiation-induced) lung disorders
• To have an in-depth knowledge of the aetiologies, epidemiology and prognoses of common respiratory diseases
• To have a core understanding of the key patho-physiological inter-relationships in cardio-pulmonary disease
• To know the common clinical presentations of respiratory disease
• To understand the importance and significance of the following symptoms, signs and/or clinical presentations:
  - » Chest pain (pleuritic or otherwise)
  - » Dyspnoea
  - » Pyrexia (in immunocompetent or immunocompromised hosts)
  - » Massive haemoptysis
  - » Persistent cough (dry or productive)
  - » Wheezing
  - » Recurrent infections or infections ‘unresponsive’ to treatment
  - » Stridor
  - » Persistent hoarseness
  - » Hypoxia

• To know the correct terminology (based on the 2008 Fleischner Society document) when reporting the radiological signs of pulmonary disease
• To have an in-depth knowledge of the capabilities, limitations and potential detrimental effects of imaging procedures or tests such as guided biopsy, percutaneous drainage, radiofrequency / microwave ablation of intrathoracic tumours
• To be aware of most recent technical advances in the field of thoracic radiology
• To have an in-depth knowledge of the utility and limitations of the following imaging tests:
  » Plain chest radiography
  » Computed tomography
  » PET/CT (PET/MR) and other nuclear medicine techniques (e.g., V/Q scintigraphy, SPECT) including radiotracers used in hybrid imaging
  » Magnetic resonance imaging
  » Ultrasound
• To know the local, national and international guidelines or position statements issued by learned societies/bodies, to include but not restricted to the following:
  » Lung cancer screening guidelines (e.g., US Preventive Services Taskforce Recommendation statement [2013]; American Cancer Society guidelines [2013]; American College of Chest Physicians guidelines [2013]; The NELSON Trial [2013]; The UKLS Lung Screen [2011])
  » Current Fleischner Society guidelines & recommendations suspected acute pulmonary embolism
  The British Thoracic Society Nodule guideline (Callister MEJ et al., Thorax 2015)
  » Current ATS/ERS idiopathic interstitial pneumonia classification update
• To understand the concepts and concerns related to radiation dose and dose reduction as applied to thoracic imaging
• To have an in-depth knowledge of:
  » Typical doses in chest radiography and CT (including doses delivered during thoracic intervention)
  » Typical doses and radiation exposures in hybrid imaging and scintigraphy/SPECT
  » Units of radiation dose (i.e. milliSieverts [mSv])
  » The concept of effective dose, computed tomography dose index [CTDI], dose length product (DLP) and the conversion factors for calculation of effective dose from the DLP
  » The concept of effective dose and dose area product (DAP) for radiographs
  » Dose reduction techniques in thoracic CT techniques with reference to kilovoltage (kV), tube current-time product (mAs), pitch, automatic exposure control/dose modulation
  » Low-dose and ‘ultralow’ dose (sub-millisievert) multidetector CT scanning
  » Iterative reconstruction techniques

• To understand the following imaging protocols:
  » CT pulmonary angiography
  » CT aorta without and with contrast
  » Staging, treatment, planning and follow-up CT and hybrid imaging (for thoracic malignancies)
  » High-resolution CT (interspaced HRCT versus volumetric acquisitions)
  » Low-dose /ultralow dose CT (for follow-up; lung cancer 'screening' studies)
  » Chest MR imaging (e.g. in selected patients with chest wall or mediastinal tumours)
• To understand the key difference between urgent findings (some of which might be clinically-unsuspected) and non-urgent findings on thoracic imaging studies and the importance of relaying this information in a timely fashion
• To have an in-depth understanding of the following urgent radiological findings:
  » Acute pulmonary embolism (including signs of right heart strain)
  » Acute aortic pathology (including aortic rupture, dissection, intramural hematoma)
  » Free intraperitoneal air under the diaphragm (in a patient not having undergone recent abdominal surgery)
  » Large pneumothorax with contralateral mediastinal shift
  » Significant tracheal narrowing (caused by external compression, intra-tracheal mass)
  » Impending superior vena caval obstruction by tumour
  » Widespread opportunistic infection in immunocompromised hosts
• To know the typical imaging signs and patterns of the following neoplastic disorders of the chest:
  » Lung cancer
  » Subtypes of lung cancer (small cell versus non-small cell lung cancer)
  » New classification of adenocarcinomas (incl. atypical adenomatous hyperplasia, adenocarcinoma in situ, minimally invasive adenocarcinoma, invasive adenocarcinoma)
  » Other thoracic neoplasms (benign & malignant), including mediastinal/tracheal tumours
  » Lymphoma
  » Oesophageal cancer
  » Hamartoma
  » Tracheal carcinoma
  » Thymic tumours
  » Thyroid neoplasms
  » Mediastinal germ cell tumours
  » Foregut duplication cysts
  » Neurogenic tumours
  » Mediastinal sarcoma

• To know the typical imaging signs and patterns of the following infectious disorders of the chest (including infections in the immunocompromised host & nosocomial pneumonias):
  » Bacterial
  » Mycobacterial (tuberculous and non-tuberculous)
  » Viral
  » Fungal
  » Parasitic
• To know the typical imaging signs and patterns of acute and chronic pulmonary thromboembolic disease (and to understand the capabilities and limitations of radiological tests in each)
• To know the typical imaging signs and patterns of the following types of emphysema:
  » Centrilobular
  » Paraseptal
  » Panacinar/panlobular
• To know the typical imaging signs and patterns of the following tracheal diseases:
  » Tracheal stenosis
  » Tracheobronchomalacia
  » Tracheal tumours
• To know the typical imaging signs and patterns of the following bronchial disorders:
  » Bronchiectasis
  » Broncholitihiasis
  » Small airways disease (constrictive obliterative bronchiolitis, ‘exudative’ bronchiolitis)
• To know the typical imaging signs and patterns of the following pulmonary hypertension
• To know the typical imaging signs and patterns of the following forms of pneumonias / interstitial pneumonias (idiopathic or otherwise):
  » Usual interstitial pneumonia
  » Non-specific interstitial pneumonia
  » Smoking-related interstitial lung diseases
  » Acute interstitial pneumonia
  » Organising pneumonia
  » Lymphoid interstitial pneumonia
• To know the typical imaging signs and patterns of the following other diffuse parenchymal lung diseases:
  » Sarcoidosis
  » Hypersensitivity pneumonitis
  » Cystic lung diseases (Langerhans’ cell histiocytosis, tuberous sclerosis / lymphangioleiomyomatosis, lymphoid interstitial pneumonia, Birt-Hogg-Dubé disease)
  » Asbestosis & other occupational lung diseases
  » Amyloidosis
  » Alveolar proteinosis

» Alveolar microlithiasis
» Eosinophilic pneumonias
» Vasculitides
» Pleuroparenchymal fibroelastosis (see also: Pleural disorders)
» Pulmonary haemorrhage syndromes
» Drug-induced lung disease

• To know the typical imaging signs and patterns of the following congenital thoracic disorders
» Bronchial atresia
» Congenital pulmonary adenomatous malformation
» Pulmonary sequestration
» Congenital lobar emphysema
» Pulmonary hypoplasia / agenesis

• To know the typical imaging signs and patterns of the following pleural disorders:
» Pleural effusion and empyema
» Benign diffuse pleural thickening
» Pleural calcification / pleural plaques
» Pneumothorax / hydropneumothorax
» Bronchopleural fistula
» Pleural tumours (pleural fibroma, lipoma, malignant pleural mesothelioma, secondary pleural malignancy [e.g. adenocarcinoma, lymphoma])
» Pleuro-parenchymal fibroelastosis (see also: Other diffuse parenchymal diseases)

• To know the typical imaging signs and patterns of the critically-ill patient and / or the patient after major traumatic injury:
» Pulmonary oedema (cardiogenic, non-cardiogenic / ARDS)
» Position of lines/tubes/catheter and other devices, and complications of misplacement
» Barotrauma/pneumothoraces (e.g. signs of tension on mobile plain films)

4. Examination structure

The examination takes place twice a year, once at the ESTI annual meeting and once during ECR. The examination consists of a written component only.

Written examination

The written examination will be run using a qualified software like the EDiR software or similar:

- 20 multiple choice questions > four answer options, 1 or more of the given answer options are correct > No negative marking for incorrect answers
- 4 short cases > No negative marking for incorrect answers
- 6 pictorial/annotate multiple choice questions – four answer options, 1 or more of the given answer options are correct > No negative marking for incorrect answers
- The exam lasts 60 minutes
- Candidates knowledge will be tested in all aspects relevant to thoracic imaging such as anatomy, physiology, clinical practice, pathology, protocols, quality parameters

Diploma renewal after five years

ESTI will renew the European Diploma in Thoracic Imaging every five years for full/corresponding radiologist members in good standing of ESTI and ESR upon proof of at least 20 CME credits per year (equalling 100 CME credits in the past five years).

5. Fee structure

Application fee for the diploma is set as following:
Full member: € 400.00
Corresponding member: € 600.00

If a candidate fails the European Diploma in Thoracic Imaging he/she has the opportunity to retake the examination one year later. A reduced fee of € 200.00 will be granted for a re-examination.

Diploma renewal fee is set at € 50.00.

6. Terminology

Successful candidates will be awarded the European Diploma in Thoracic Imaging.