

**CURRICULUM
FOR
UNDERGRADUATE
RADIOLOGICAL
EDUCATION**

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U-Level Curriculum

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Coordination: ESR Office, Neutorgasse 9, 1010 Vienna, Austria
 Phone: +43 1 533 40 64-28 | Fax: +43 1 533 40 64-448
 E-mail: boardaffairs@myesr.org | www.myESR.org
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PREFACE

The Curriculum for Undergraduate Radiological Education (U-Level Curriculum) is meant to provide radiologists involved in curricular planning in medical schools throughout Europe with potential contents. The role and extent of radiology within undergraduate medical education varies widely between medical schools and countries. The year when radiological content is provided varies also between medical schools in different countries and sometimes even within the same country.

The current U-Level Curriculum is by no means meant as a ubiquitous requirement, but rather as a basis to work on in curricular planning, depending on the individual situation in the respective medical faculty. Parts of the curricular contents of this curriculum may seem too advanced for some situations in undergraduate medical education; these can be reserved for medical students with a special interest in radiology, e.g. those performing electives in radiology.

The U-Level Curriculum is divided into two modules. Module U-I covers basic topics in radiation biology, radiation protection and imaging modalities. Module U-II contains the fundamental principles of radiology and image-guided interventions for the most important and/or common disorders. As with Levels I, II and III of the European Training Curriculum for Radiology, the chapters of the U-Level Curriculum are further subdivided into the chapters Knowledge, Skills and Competences & Attitudes.

The Curriculum for Undergraduate Radiological Education is intended as a guide to help improve and standardise education in radiology throughout European medical schools.

As the specialty of radiology is evolving continuously, this document is meant as a living document and should be reviewed and revised at regular intervals to adapt its content to the profession's advances.

I would like to sincerely thank the Undergraduate Education Subcommittee and its chairperson Prof. Vlastimil Válek, the members of the board of the Radiology Trainees Forum, the Board of Directors and the Executive Council of the European Society of Radiology as well as all the office team of the ESR for their immensely valuable support.

Barcelona, January 2017

Laura Oleaga
Chairperson of the ESR Education Committee

INTRODUCTION

Radiology is a discipline with high relevance during undergraduate medical education. Imaging shall already form a part of medical education during preclinical studies (which is in some countries comprised in a bachelor degree) with cross-sectional and radiographic anatomy, radiation biology, radiation protection and imaging physics. During the clinical part of undergraduate medical education (which is in some countries referred to as a master degree), radiology is vital to teach the diagnostic work-up as well as image-guided therapeutic approaches for almost all disease entities.

Last but not least, radiology and medical imaging are an integral part of most examinations throughout undergraduate medical education including finals.



The curriculum for undergraduate medical education is divided into two modules:

Module U-I:

this module pertains to the basic principles of radiation biology, radiation protection and imaging physics. Risks, benefits and potential side effects of the different modalities and contrast media are also covered. This module is mostly modality-oriented.

Module U-II:

this module covers the fundamental aspects of radiology and image-guided interventions for the most important and/or most common diseases of the various organ systems including basic principles of interdisciplinary communication. This module is mostly organ system-oriented.

The curriculum is not meant as a ubiquitous requirement or as a checklist for examinations, but rather as a suggestion to aid radiologists in curricular planning in medical faculties. The curriculum provides the information of the necessary knowledge and skills medical students should acquire during their training period, to correctly interpret basic radiological exams in the context of the individual patient with understanding of applicability and limitations.

The contents of the curriculum can be flexibly integrated into curricular planning. Module U-I could for example form the basis for a radiological course in the earlier phases of the medical curriculum, while module U-II could be integrated into an organ system-based curriculum, if applicable. In faculties with integrated teaching systems, module U-I should be preferentially taught toward the beginning of medical education, while the chapters in module U-II can be integrated more easily into the remainder of the medical curriculum. Radiation protection may be presented following a holistic concept of safety within this setting. Moreover, radiological teaching of imaging anatomy can be readily integrated into an anatomy teaching module. Overall, imaging should be understood in a broad sense as biomedical imaging and image-guided intervention. Nuclear medicine and aspects of anatomy might be fully integrated in such a concept depending on the setting in the respective medical faculty.

The referral for medical imaging should be an important starting point for the teaching modules and chapters. The sections in module U-II can be designed as training course in writing referrals for imaging and in becoming familiar with interpreting imaging examinations for common indications and interpreting reported results. Another important aspect to be introduced is the knowledge of the common indications and preparation for imaging studies as well as the limitations and contraindications and all aspects of completing request forms correctly. Students should also acquire a basic understanding of the risks of ionizing radiation, magnetic resonance and ultrasound imaging, the use of contrast media and the risks associated with different interventional procedures. Students should learn how to communicate effectively with patients, health care professionals and radiological teams.

Students should be encouraged to attend radiological investigations, to learn to work with radiological tools (PACS, web PACS and radiological CDs), to participate in multidisciplinary meetings and to have the possibility to experience the daily work in a department.

During the course of their medical education, medical students should also become familiar with the basic skills of understanding scientific literature. This could also form part of the radiological curriculum.

U-I & U-II:
**U-LEVEL
TRAINING
(UNDERGRADUATE)**

U-LEVEL TRAINING (UNDERGRADUATE)

The subject content of the curriculum for U-Level Training includes the following elements:

Module U-I

U-I-1 Principles of Radiation Biology and Radiation Protection

U-I-2 Principles of Radiological Techniques

U-I-3 Contrast Media in Radiology

Module U-II

U-II-1 Breast Imaging

U-II-2 Cardiovascular Radiology

U-II-3 Chest Radiology

U-II-4 Gastrointestinal and Abdominal Radiology

U-II-5 Gynaecological and Obstetric Radiology

U-II-6 Head and Neck Imaging

U-II-7 Interventional Radiology

U-II-8 Musculoskeletal Imaging

U-II-9 Neuroradiology

U-II-10 Paediatric Radiology

U-II-11 Urogenital Radiology

MODULE U-I

U-I-1

PRINCIPLES OF RADIATION BIOLOGY AND RADIATION PROTECTION

KNOWLEDGE

- To list the sources and properties of ionising radiation and radioactive decay
- To describe the generation of X-rays and their interaction with matter
- To describe the most important dose measures, including absorbed energy dose (Gy), organ and effective doses (Sv)
- To be familiar with the principles of the dose length product (DLP)
- To explain stochastic, deterministic and teratogenic radiation effects
- To describe the effects of ionising radiation on cells, tissues and organs and to list the mechanisms of repair
- To list types and magnitudes of radiation risk from radiation exposure in medicine and to compare it to radiation exposure from natural sources
- To list concepts of dose measurement and the relevant dose limits
- To understand the As Low As Reasonably Achievable (ALARA) principle
- To list the factors influencing image quality and dose in diagnostic radiology
- To be familiar with the Euratom directive which includes the obligation of keeping records on radiation dose of radiological exams and the patient's clinical record

SKILLS

- To apply the knowledge of radiation biology and physics to optimally select the best imaging modality
- To use the correct terms to characterise exposure from ionising radiation
- To communicate the radiation risk to the patient at an understandable level

COMPETENCES AND ATTITUDES

- To apply the As Low As Reasonably Achievable (ALARA) principle to the different radiological methods involving ionising radiation
- To apply radiation protection measures in diagnostic and interventional radiology
- To avoid unnecessary radiation exposure by choosing the optimal modality and technique
- To consult patients, patients' families and staff on radiation-related risks and benefits of a planned procedure

U-1-2

PRINCIPLES OF RADIOLOGICAL TECHNIQUES**KNOWLEDGE**

- To explain the concept of pre- and post-test-probabilities of diagnostic tests
- To describe the relative value of a radiographic examination for various organ systems and indications
- To list the components of an X-ray unit and explain the process of X-ray generation
- To describe the principles of fluoroscopy and its common indications
- To list and describe the factors affecting image quality and dose in radiography and fluoroscopy
- To describe the principles of soft tissue radiography in mammography
- To describe the positioning of the patient for common radiographic techniques (e.g. chest X-ray)
- To describe the normal anatomy of the various organs on radiographic images
- To explain the concept of spatial, temporal and contrast resolution
- To explain the principle of contrast in the different imaging modalities
- To describe the relative diagnostic value of a computed tomography (CT) examination for the various organ systems and indications
- To explain the physical basis of image formation of computed tomography
- To describe the scale of Hounsfield units (HU) and the principle of window centre and width
- To list normal levels of attenuation (in HU) for various organs and common pathologies (e.g. haemorrhage, calcifications)
- To describe the normal anatomy of the various organs on CT
- To explain the relative value of a magnetic resonance imaging (MRI) examination for the various organ systems and indications
- To describe the basic principles of image formation with MRI
- To list the most commonly used pulse sequences in MRI (including T2-weighted sequences, T1-weighted sequences, fat suppressed sequences such as STIR sequences, FLAIR sequences, diffusion-weighted imaging)
- To describe the absolute or relative contraindications against MR imaging
- To explain the safety issues in the MR environment with regard to patients and staff
- To describe the normal anatomy of the various organs on MRI
- To explain the relative value of an ultrasound examination for various organ systems and indications
- To describe the basic principles of image formation with ultrasonography and to list the tissue properties that determine it
- To list the frequency of transmission and different types of transducers for various indications for ultrasonography
- To be aware of the indications and contraindications for contrast-enhanced ultrasonography
- To describe the principles of the Doppler effect
- To describe the normal anatomy of the various organs on ultrasonography
- To describe the principles of digital subtraction angiography (DSA)
- To have a basic understanding of the different types and techniques of image-guided interventions
- To describe the basic infrastructure of imaging informatics, including Picture Archiving and Communication Systems (PACS) and Radiological Information Systems (RIS)
- To explain the relative value of hybrid imaging (PET/CT, PET/MRI) examinations for the various organ systems and indications

SKILLS

- To recognise the technology applied when encountering a radiological image (e.g. a.p. chest X-ray, lung CT etc.)
- To recognise sufficient and insufficient image quality in radiography, fluoroscopy, CT, MRI and ultrasonography
- To measure Hounsfield units on CT and recognise the respective tissue/substrate
- To recognise the most commonly used pulse sequences and slice orientations when encountering an MR image (e.g. coronal T2-weighted image etc.)

COMPETENCES AND ATTITUDES

- To confidently delineate normal anatomy on radiography, fluoroscopy, CT, MRI and ultrasonography
- To communicate the diagnostic value of the respective imaging modality for common indications to the patient
- To communicate the procedure of common radiological methods to the patient
- To communicate the risks and benefits of various common radiological examinations (including radiography, fluoroscopy, CT, MRI and ultrasonography) to patients and their families
- To recognise suboptimal image quality and its causes
- To be able to make a clinical request for an imaging examination

U-1-3 CONTRAST MEDIA IN RADIOLOGY

KNOWLEDGE

- To describe the indications for the use of X-ray contrast media in the study of various organs/organ systems
- To describe the indications for the use of CT contrast media in the study of various organs/ organ systems
- To list typical risks and side effects of commonly used iodinated contrast media (X-ray and CT contrast media)
- To describe the indications for the use of MR contrast media in the study of various organs/organ systems
- To list typical risks and side effects of commonly used MRI contrast media
- To have a basic understanding of contrast media for ultrasonography
- To have a basic understanding of the various timing phases of contrast media application and their respective values according to the clinical problem
- To describe risk factors of contrast media nephrotoxicity, to list measures to reduce it and to be familiar with the management of patients with renal insufficiency
- To have a basic understanding of nephrogenic systemic fibrosis (NSF) and to list measures to reduce it

SKILLS

- To recognise if a CT or MRI is contrast-enhanced or not
- To recognise the various types of contrast-enhanced fluoroscopic examinations

COMPETENCES AND ATTITUDES

- To decide (under supervision) whether a contrast medium application is warranted for a given clinical indication
- To communicate the risks and benefits of contrast media application for various common radiological examinations (including radiography, fluoroscopy, CT, MRI and ultrasonography) to patients and their families

MODULE U-II

U-II-1

BREAST IMAGING

KNOWLEDGE

- To describe the normal anatomy and physiology of the female breast, axilla and associated structures and how they change with age
- To have a basic understanding of the main radiological techniques employed in breast imaging (including mammography, ultrasonography and MRI) as well as their indications and relative diagnostic value
- To have a basic understanding of the appearance of common benign diseases and of breast cancer on mammography
- To have a basic understanding of techniques of ultrasound of the breast and of the appearance of common breast pathologies on ultrasound
- To have a basic understanding of MRI of the breast
- To have a basic understanding of the relative values, common indications, contraindications and limitations in breast imaging

SKILLS

- To recognise basic imaging patterns on mammographic images
- To recognise basic imaging patterns on an ultrasound examination of the breast

COMPETENCES AND ATTITUDES

- To communicate the benefits, risk and basic technical aspects of mammography, ultrasound and MRI of the breast
- To communicate the benefits and risks of mammography screening

U-II-2 CARDIOVASCULAR RADIOLOGY

KNOWLEDGE

- To describe the normal anatomy and physiology of the heart and vessels on radiographs, ultrasonography/ Doppler sonography, CT, MRI and DSA
- To have a basic understanding of the main imaging techniques, radiography, ultrasonography, CT, MRI and DSA used for cardiovascular imaging
- To describe the different types of cardiac configuration on chest radiography
- To explain which chambers form the border of the cardiac silhouette on a chest radiography
- To have a basic understanding of congenital heart disease and the diagnostic features on conventional radiographs
- To differentiate radiological features and causes of cardiac enlargement, including acquired valvular disease and pericardial disease
- To describe radiological features of vascular occlusion, stenosis and thrombosis in central and peripheral vessels
- To explain the diagnostic evaluation of ischaemic heart disease
- To describe the normal dimensions of the aorta and classify aortic aneurysms and dissections
- To have a basic understanding of the relative values, common indications, contraindications and limitations in cardiovascular imaging

SKILLS

- To recognise patterns of cardiac enlargement on radiographic images of the chest
- To recognise basic imaging patterns of occlusion, stenosis, thrombosis and aneurysm on Doppler sonography, CT, MRI and DSA

COMPETENCES AND ATTITUDES

- To communicate with patients to explain diagnostic imaging and interventional procedures of the cardiac and vascular systems
- To communicate the results of cardiovascular imaging examinations to patients and their families

U-II-3 CHEST RADIOLOGY

KNOWLEDGE

- To describe the anatomy and physiology of the respiratory system, heart and vessels, mediastinum and chest wall on radiographs and CT
- To have a basic understanding of the main imaging techniques (radiography, CT and MRI) used in thoracic imaging
- To have an understanding of imaging patterns in chest radiology including consolidations, nodules, radiolucencies, hyperinflation
- To describe the chest radiography signs, including silhouette sign, air bronchogram, air crescent sign, deep sulcus sign
- To describe the imaging appearance of monitoring and support devices (“tubes and lines”) including endotracheal tubes, central venous catheters, nasogastric tubes, chest drains and pacemakers
- To list the typical chest radiography appearances and common causes of pleural effusion
- To describe the clinical and imaging features of pneumothorax and tension pneumothorax
- To list typical imaging features of pneumonia on radiographs and CT
- To list typical imaging features of emphysema on radiographs and CT
- To describe the typical imaging appearances of bronchiogenic carcinoma and pulmonary metastases on radiographs and CT
- To list the typical imaging patterns of mediastinal masses on radiographs and CT
- To have an understanding of the clinical work-up of lung nodules
- To describe the imaging signs of pulmonary embolism
- To have a basic understanding of the common indications, contraindications and limitations in thoracic imaging
- To be aware of the differences between high resolution CT (HRCT) of the chest, CT angiography of the pulmonary arteries and staging CT of the chest

SKILLS

- To identify the following structures on postero-anterior (PA) and lateral chest radiographs: lobes and fissures of the lung, trachea, main bronchi, cardiac atria and ventricles, pulmonary arteries, aorta, mediastinal components, diaphragm
- To identify the proper positioning or malpositioning of the following monitoring and support devices (“tubes and lines”) including endotracheal tubes, central venous catheters, nasogastric tubes, chest drains, pacemakers
- To identify pneumonia, emphysema, pulmonary and mediastinal masses, and pleural effusions on radiographs and CT
- To confidently identify pneumothorax and tension pneumothorax on chest radiographs

COMPETENCES AND ATTITUDES

- To communicate with patients to explain diagnostic imaging procedures of the chest
- To communicate the results of chest imaging examinations to patients and their families

U-II-4

GASTROINTESTINAL AND ABDOMINAL RADIOLOGY**KNOWLEDGE**

- To describe the normal anatomy and physiology of the internal viscera, abdominal organs, omentum, mesentery and peritoneum on conventional radiology, CT, ultrasound and MRI
- To have a basic understanding of the main imaging techniques, radiography, fluoroscopy, ultrasonography, CT and MRI used in gastrointestinal and abdominal imaging
- To list typical imaging features of acute abdominal conditions, including perforation, haemorrhage, inflammation, infection, obstruction, ischaemia and infarction on radiographs, ultrasound and CT
- To list typical imaging features of colon tumours, diverticulitis, and inflammatory bowel diseases
- To describe typical imaging features of primary and secondary tumours of the solid abdominal organs and of the gastrointestinal tract
- To have a basic understanding of the relative values, common indications, contraindications and limitations in gastrointestinal and abdominal imaging

SKILLS

- To delineate the normal internal viscera, abdominal organs, omentum, mesentery and peritoneum on conventional radiology, CT, ultrasound and MRI
- To identify signs of ileus/gastrointestinal obstruction on radiographic images of the abdomen
- To identify signs of gastrointestinal perforation on radiographic images of the abdomen

COMPETENCES AND ATTITUDES

- To communicate with patients to explain diagnostic imaging procedures of the abdomen
- To communicate the results of abdominal imaging examinations to patients and their families

U-II-5

GYNAECOLOGICAL AND OBSTETRIC RADIOLOGY**KNOWLEDGE**

- To describe the normal anatomy and physiology of the female reproductive organs on ultrasound, CT and MRI
- To have a basic understanding of the main techniques radiography, ultrasonography, CT and MRI used in gynaecological and obstetric imaging
- To explain how the female reproductive organs change with age and during pregnancy
- To list typical imaging features of benign and malignant tumours of the female reproductive organs
- To describe the typical imaging features of the most common disorders associated with pregnancy and delivery
- To list techniques to reduce exposure doses for radiographic and CT examinations of the female reproductive organs
- To have a basic understanding of the relative values, common indications, contraindications and limitations in gynaecologic and obstetric imaging

SKILLS

- To identify the normal imaging anatomy of the female pelvis on cross-sectional imaging

COMPETENCES AND ATTITUDES

- To communicate with patients in order to explain diagnostic imaging procedures of the female reproductive organs
- To communicate the results of a gynaecological or obstetric imaging examination to patients and their families
- To choose the optimally suited imaging modality for pregnant patients

U-II-6 HEAD AND NECK IMAGING

KNOWLEDGE

- To describe the normal anatomy and physiology of the head and neck on cross-sectional imaging
- To have a basic understanding of the main techniques, radiography, fluoroscopy, ultrasonography, CT and MRI used in head and neck imaging
- To describe common imaging manifestations of trauma, inflammation and infection of the head and neck region
- To describe typical imaging manifestations of tumours of the head and neck region
- To have a basic understanding of the relative values common indications, contraindications and limitations in head and neck imaging

SKILLS

- To delineate the normal anatomy of the head and neck region on conventional radiology and cross-sectional imaging

COMPETENCES AND ATTITUDES

- To communicate with patients in order to explain diagnostic imaging procedures of the head and neck region
- To communicate the results of an imaging examination of the head and neck to patients and their families

U-II-7 INTERVENTIONAL RADIOLOGY

KNOWLEDGE

- To describe the normal anatomy and physiology of the arterial and venous system and to have an understanding of its relevance to interventional radiology
- To list the more frequent endovascular approaches to common disorders in interventional radiology
- To list the common approaches for image-guided biopsy taking, placement of drainages and ablative techniques
- To have a basic understanding of the role of vascular techniques: angioplasty, stenting, coiling embolization in the treatment of arterial and venous diseases
- To have a basic understanding of non-vascular head and neck, musculoskeletal, thoracic, breast, gastrointestinal and genito-urinary interventional procedures
- To have an understanding of the risks involved in common interventional techniques
- To list the standard procedure in emergency situations, including resuscitation techniques
- To have a basic understanding of the common indications, contraindications and limitations in interventional radiology

SKILLS

- To delineate the normal anatomy of the arterial and venous vessels on digital subtraction angiography
- To prepare for common interventional radiological procedures under supervision
- To observe basic catheterisation techniques and arteriographies
- To observe image-guided biopsy taking, placement of drainages or ablative techniques

COMPETENCES AND ATTITUDES

- To communicate with patients in order to explain typical procedures in interventional radiology
- To communicate the risks and benefits of basic interventional radiological procedures to patients and their families
- To evaluate and interview the patient before the procedure and comprehensively explain how it is done
- To clarify the advantages and disadvantages of the interventional imaging technique
- To monitor the patient progress during and after the process

U-II-8 MUSCULOSKELETAL IMAGING

KNOWLEDGE

- To describe the normal anatomy and physiology of the musculoskeletal system on conventional radiology and cross-sectional imaging
- To have a basic understanding of the main techniques, radiography, ultrasonography, CT and MRI used in musculoskeletal imaging
- To list common imaging presentations of trauma involving the skeleton on conventional radiographs
- To list typical imaging presentations of degenerative disorders of the musculoskeletal system on conventional radiographs
- To describe common imaging manifestations of musculoskeletal infection and inflammation, metabolic diseases, including osteoporosis, and common bone tumours
- To have a basic understanding of the relative values, common indications, contraindications and limitations in musculoskeletal imaging

SKILLS

- To delineate the normal musculoskeletal anatomy on conventional radiographs and cross-sectional imaging
- To detect and differentiate common types of fractures on conventional radiographs (e.g. Colles fracture)

COMPETENCES AND ATTITUDES

- To communicate with patients in order to explain diagnostic imaging procedures of the musculoskeletal system
- To communicate the results of a musculoskeletal imaging examination to patients and their families

U-||-9 NEURORADIOLOGY

KNOWLEDGE

- To describe the normal anatomy and physiology of the brain, skull, skull base, spine, spinal cord and nerve roots on cross-sectional imaging
- To have a basic understanding of the main techniques used in neuroradiology; radiography, ultrasonography, CT and MRI
- To list typical imaging features of ischaemic and haemorrhagic stroke on cross-sectional imaging
- To describe common imaging features of traumatic brain injury and spinal trauma on cross-sectional imaging
- To list typical imaging features of white matter disease, inflammation and degeneration on cross-sectional imaging
- To describe typical imaging features of the most common tumours of the brain and spine
- To describe the anatomy and typical imaging features of pathologies of pontocerebellar angle
- To describe the acute headache imaging management and typical imaging features of related diseases
- To describe typical imaging features of the most common vascular diseases
- To have a basic knowledge of neuroradiological interventions including revascularisation and current interventional treatment options for intracranial aneurysms and arteriovenous malformations of brain and spine.
- To have a basic understanding of the relative value, common indications, contraindications and limitations in neuroradiology

SKILLS

- To delineate the normal anatomy of the brain and spine on cross-sectional imaging
- To detect and differentiate the different types of intracranial hemorrhage on cross-sectional imaging
- To delineate signs of cord compression on cross-sectional imaging

COMPETENCES AND ATTITUDES

- To communicate with patients to explain diagnostic and common interventional procedures of the brain and spine
- To communicate the results of an imaging examination of the brain and spine to patients and their families

U-II-10 PAEDIATRIC RADIOLOGY

KNOWLEDGE

- To describe normal paediatric anatomy and physiology and how it changes with age on conventional radiology, ultrasonography and cross-sectional imaging
- To have a basic understanding of the main techniques (radiography, ultrasound, radiography CT and MRI) used in paediatric imaging
- To explain the increased vulnerability of children to ionizing radiation
- To have a basic understanding of the typical imaging manifestations of accidental and non-accidental trauma
- To list basic imaging features of the most common disorders of the brain, spine, chest, gastrointestinal tract and abdomen, urogenital system and musculoskeletal system in neonates, infants, children and adolescents
- To have a basic understanding of the relative value, common indications, contraindications and limitations in paediatric imaging

SKILLS

- To delineate the normal paediatric anatomy on conventional radiographs of the chest and skeletal system
- To detect signs of fractures on conventional radiographs in the paediatric age group

COMPETENCES AND ATTITUDES

- To establish a child-friendly environment
- To communicate with children and adolescents as well as their families to explain imaging procedures in paediatric radiology
- To communicate the results of an imaging examination to children and adolescents as well as their families

U-II-11 UROGENITAL RADIOLOGY

KNOWLEDGE

- To describe the normal anatomy and physiology of the retroperitoneum, kidneys, ureters, bladder, urethra and genital tract on ultrasonography and cross-sectional imaging
- To have a basic understanding of the main techniques (radiography, ultrasonography, CT and MRI) used in urogenital radiology
- To explain when to refer a patient to a radiography, CT or MRI of the urogenital system
- To list typical imaging features of the most common diseases of the kidneys and of the urinary tract
- To list typical imaging features of the most common pathologies of the prostate, seminal vesicles and testes
- To have a basic understanding of the relative value, common indications, contraindications and limitations in urogenital imaging

SKILLS

- To delineate the physiological urogenital structures on cross sectional images
- To detect signs of urinary obstruction on ultrasonography, CT and MRI

COMPETENCES AND ATTITUDES

- To communicate with patients in order to explain imaging procedures in urogenital radiology
- To communicate the results of a urogenital imaging examination to patients and their families

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