

**UNION EUROPÉENNE DES MÉDECINS SPÉCIALISTES
EUROPEAN UNION OF MEDICAL SPECIALISTS**



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**EUROPEAN TRAINING
REQUIREMENTS FOR THE SPECIALTY
OF MEDICAL ONCOLOGY**

European Standards of Postgraduate Medical Specialist Training

UEMS Section of Medical Oncology

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Glossary of terms

ASCO: American Society of Medical Oncology

[WMA: World Medical Association](#)

ESMO: European Society of Medical Oncology.

[WHO: World Health Organization](#)

[CME: Continuing Medical Education.](#)

[CPD: continuing professional development.](#)

[H&N: Head and Neck.](#)

[NGS: Next Generation Sequence.](#)

[UICC: Union for International Cancer Control.](#)

[FIGO: Federation of Gynecology and Obstetrics.](#)

[GIST: Gastrointestinal Tumour.](#)

[MRI: Magnetic Resonance Imaging.](#)

[IGCCCG: Germ Cell Cancer Collaborative Group](#)

Good learning environment: Encouragement for self-directed learning as well as recognizing the learning potential in all aspects of day-to-day work.

Harmonization: The process of creating common standards in the training of Medical Oncology across the different European nations.

Medical Oncology: Is a medical specialty concerned with the study, research, diagnosis and medical management of the neoplastic diseases. It may be practiced as an independent oncological specialty or may be integrated in the broader practice of clinical oncology.

Medical Oncology Specialist/Consultant: A national or European board-certified Medical Oncologist who demonstrates a commitment to patients by applying best practices and adhering to high ethical standards.

Portfolio/Logbook: A written or electronic document for the trainee to fill out his/her training experience, confirmed by the trainer.

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Program Director: A highly qualified medical oncologist with considerable experience in trainee education and in organizational activities overseeing the training of Medical Oncology trainees

Scholar: Medical Oncology trainee who engages not only in training to obtain the degree of a Medical Oncologist, but also commits to lifelong learning and professional development through on-going development.

Trainer: A designated doctor familiar with the principles of medical education and needs of a trainee in Medical Oncology training program.

Training Center: A designated institution, or group of institutions, which offer the trainee practice across the full range of the specialty including involvement with allied specialties to provide the trainee in Medical Oncology to develop his/her skills in a team approach to patient care

Preamble

The UEMS is a non-governmental organization representing national associations of medical specialists at the European Level. With a current membership of 41 national associations and operating through 43 Specialist Sections and European Boards, the UEMS is committed to promote the free movement of medical specialists across Europe while ensuring the highest level of training which will pave the way to the improvement of quality of care for the benefit of all European citizens. The UEMS areas of expertise notably encompass Continuing Medical Education, Post Graduate Training and Quality Assurance.

It is the UEMS' belief that the quality of medical care and expertise is directly linked to the quality of training provided to the medical professionals. Therefore, the UEMS committed itself to contribute to the improvement of medical training at the European level through the development of European Standards in the different medical disciplines. No matter where doctors are trained, they should have at least the same core competencies.

The legal mechanism for ensuring the free movement of doctors within Europe through recognition of their qualifications was established back in the 1970s by the European Union. One of the sectorial directives (in the Treaty of Rome) specifically addressed the issue of Europe-wide medical training. However, in 2005, the European Commission suggested to the European Parliament and Council that there should be a single legal framework for the recognition of professional qualifications to facilitate and improve the movement of all workers throughout Europe. This directive (Directive 2005/36/EC) established the mechanism for automatic mutual recognition of qualifications for doctors according to the training requirements within the individual member states; this is based on the length of training in the specialty and the type of

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qualification.

In 1994, the UEMS adopted its Charter on Post Graduate Training aiming at providing the recommendations at the European level for good medical training. Made up of six chapters, this Charter set the basis for the European approach in the field of Post Graduate Training. With five chapters being common to all specialties, this Charter provided a sixth chapter, known as "Chapter 6", that each Specialist Section was to complete according to the specific needs of their discipline.

More than a decade after the introduction of this Charter, the UEMS Specialist Sections and European Boards have continued working on developing these European Standards in Medical training that reflects modern medical practice and current scientific findings. In doing so, the UEMS Specialist Sections and European Boards did not aim to supersede the National Authorities' competence in defining the content of postgraduate training in their own State but rather to complement these and ensure that high quality training is provided across Europe.

At the European level, the legal mechanism ensuring the free movement of doctors through the recognition of their qualifications was established back in the 1970s by the European Union. Sectorial Directives were adopted and one Directive addressed specifically the issue of medical Training at the European level. However, in 2005, the European Commission proposed to the European Parliament and Council to have a unique legal framework for the recognition of the Professional Qualifications to facilitate and improve the mobility of all workers throughout Europe. This Directive 2005/36/EC established the mechanism of automatic mutual recognition of qualifications for medical doctors according to training requirements within all Member States; this is based on the length of training in the Specialty and the title of qualification.

Given the long-standing experience of UEMS Specialist Sections and European Boards on the one hand and the European legal framework enabling Medical Specialists and Trainees to move from one country to another on the other hand, the UEMS is uniquely in position to provide specialty-based recommendations. The UEMS values professional competence as "the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individual and community being served"¹. While professional activity is regulated by national law in EU Member States, it is the UEMS understanding that it has to comply with international treaties and UN declarations on Human Rights as well as the WMA International Code of Medical Ethics.

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Medical Oncology Background

This current document derives from the previous Chapter 6 of the Training Charter and provides definitions of specialist Medical Oncological competencies and procedures as well as how to document and assess them. For the sake of transparency and coherence, it has been renamed as “Training Requirements for the Specialty of Medical Oncology 2023”. This document aims to provide the basic Training Requirements for the specialty and should be regularly updated by UEMS Medical Oncology Section to reflect scientific and medical progress. The three-part structure of this document (trainee, trainer, training institution) reflects the UEMS approach to have a coherent pragmatic document not only for medical specialists but also for decision-makers at the National and European level interested in knowing more about medical specialist training.

The objectives of the UEMS Medical Oncology Section (UEMS-MOS) include the progressive harmonization of the content and quality of training in Medical Oncology within the member states of the European Union (EU) and the other European countries. To this end the UEMS-MOS will continue to co-operate with the European Society of Medical Oncology (ESMO) and the individual national Medical Oncology societies and professional unions to produce the definitions of the training requirements for the specialty of Medical Oncology. This will include the contents of training, the assessment of competence and an outline of the desirable context for training i.e. requirements for trainees, trainers and training institutions.

This process of standardization and harmonization of Medical Oncology training runs in parallel with European developments in the certification, recertification, continuing medical education (CME) and continuing professional development (CPD) of Medical Oncologists. This includes the development of a European Diploma General of Medical Oncology and the supporting on-line resources. It is accepted that there is a prevailing trend for increased sub-specialization in Medical Oncology, and this is supported by UEMS-MOS whenever it is consistent with improved standards of clinical practice. However, in order to meet the needs of patients and the wide variety of models of service provision across Europe it is essential to ensure that all Medical Oncologists obtain broad based training across all of general Medical Oncology irrespective of any further sub-specialization and it is this training in general Medical Oncology that is defined here. The Training Requirements for the Specialty of Medical Oncology 2023 are a development from previous ESMO documents. The UEMS-MOS tasked a sub-group to review these curricula.

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Oncology Training Aims

The training requirements for the specialty of Medical Oncology aim to produce a competent specialist Medical Oncologist. A Medical Oncologist, a sub-specialization of a physician, predominantly cares for patients with oncological disorders and the concepts of Medical Oncology and Cancer Medicine can be used interchangeably. Care of patients with oncological disorders embraces a wide range of emergency and elective clinical activities. Medical Oncologists need knowledge of not only the underlying disease processes, available diagnostic and therapeutic modalities but also an appreciation of the importance of the epidemiology and potential for prevention of oncological disease. Medical Oncologists need a broad understanding of the oncological needs of individual patients and the communities in which they live. In order to provide optimal patient care Medical Oncologists need the ability to work as leaders of, or within, teams and systems involving other healthcare professionals. Medical Oncologists, who generally work as hospital-based specialists, need to integrate their work with not only community based primary care colleagues but also other hospital-based physicians, e.g., [Clinical Oncologists](#), Radiation Oncologists or Pathologists, as well as working closely with Surgeons and the imaging specialties, e.g., radiology or nuclear medicine. Medical Oncologists have a wide variety of opportunities for research and the training is designed to facilitate opportunities for academic careers.

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1 TRAINING REQUIREMENTS FOR TRAINEES

1.1 Content of training and learning outcome

Competencies required of the trainee

A medical trainee is a doctor who has completed their general professional training as a physician and is in an accredited training program to become a recognized medical specialist. Variably known in different countries as an intern, resident, fellow or registrar. 'Learning Outcomes' means statements of what a learner knows, understands and is able to do on completion of a learning process, which are defined in terms of competence (measured or observed as knowledge, skills and professional behavior).

A Medical Oncology specialist (or consultant) is an individual who has undertaken successfully a recognized program of postgraduate training within Medical Oncology. In addition, such individuals typically, but not universally (this depends at present on differing requirements between countries) will have undertaken postgraduate training of a general nature immediately following their completion of undergraduate studies and a further period of more advanced training in general internal medicine. The appointment as a Medical Oncology specialist (or consultant) is made by an institution within the individual's country of training and takes due note of the satisfactory completion of training as required within that country as related to the domains of knowledge, clinical skills, experience and professional behaviors.

The underlying principle as regards this document is that it promotes high standards of care for patients with oncological conditions throughout the European Union and sets the basic requirements in the domains listed above to enable specialists/consultants to move across European country borders for professional purposes.

1.2 Theoretical Medical Oncology Competencies

Adapted from ESMO/ASCO Recommendations for a Global Curriculum in Medical Oncology Edition 2016.

Medical oncology is a medical specialty concerned with the study, research, diagnosis and medical management of the neoplastic diseases.

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1.2.1 GENERAL (transversal) COMPETENCIES

The general competencies are to be acquired during the full medical oncology training period

1.2.1.1 *Professional Values and Attitude*

It is mandatory to demonstrate a commitment with patients and society through ethical practice, profession-led regulation, and high personal standards of behavior.

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- a) Establish a commitment to their patients, colleagues and society through ethical practice:
 - Exhibit appropriate professional behavior in practice, including honesty, integrity, commitment, compassion, respect and altruism.
 - Deliver the highest quality care and maintenance of competence.
 - Adequately respond to ethical issues recognized through truth-telling and informed decision-making process.
 - Recognize and appropriately respond to ethical issues encountered in research.
 - Detect the principles and limits of patient confidentiality as defined by professional practice standards and the law.
 - Maintain appropriate boundaries with patients.
- b) Demonstrate a commitment to their patients, colleagues and society through participation in profession regulation
 - Demonstrate knowledge and understanding of the professional, legal and ethical codes of practice.
 - Fulfill the regulatory and legal obligations required to develop current practice.
 - Demonstrate responsibility to professional regulators
 - Maintain appropriate responses to other's unprofessional behaviors in practice.
 - Participate in peer review.
- c) Maintain a sustainable clinical practice
 - Balance personal and professional priorities

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- Strive
- Recognize other colleagues in need and respond adequately

1.2.1.2 *Clinical Communication*

Recognize communication as a key clinical competency to facilitate the doctor-patient relationship including:

- a) Development of trust and ethical therapeutic relationships with patients and families:
 - Establish relationships with patients based on understanding, trust, respect, honesty and empathy
 - Respect patient confidentiality, privacy and autonomy.
 - Listen effectively, addressing misunderstanding
 - Be aware of and responsive to nonverbal cues
 - Facilitate a structured clinical encounter
- b) Synthesize and share relevant information and perspectives of patients and families, colleagues and other professionals.
 - Obtain information about patient's disease (including cultural background, socioeconomic status or general health status) and about patient's beliefs, concerns and expectations.
 - Gather relevant information from other sources such as patient's family, caregivers, and other professionals, with appropriate respect for patient confidentiality, to develop a coherent shared plan of care.
- c) Be able to explain accurately to patients, families and other professionals
 - Convey information in an empathetic, humane manner to do it understandable, being able to manage medical uncertainty.
 - Encourage discussion and participation in informed decision-making, while respecting patient's preferences for the extent of information to receive.
 - Appropriately document informed decision-making process, using clear records of clinical encounters and plans, using staging systems or prognosis indices as needed
 - Deliver information effectively and sensitively regarding serious issues, as diagnosis or progression of cancer.
 - Contemplate the possibility to participate in clinical trials.
- d) Present information about cancer effectively to the public.

1.2.1.3 *General clinical abilities*

It will be fundamental to apply medical knowledge, clinical skills and professional attitudes to provide patient-centered care.

- a) Evaluate patients through a complete and appropriate assessment
 - Obtain a concise and accurate clinical history
 - Perform a focused physical examination that is relevant to a patient with suspected cancer, who has cancer, or is a cancer survivor, with the aim of diagnosis, management, health promotion and disease prevention

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- Demonstrate effective clinical problem solving and judgement to address patient problems, interpreting available data and integrating information to generate differential diagnosis.
 - Indicate evidence-based management plans, in collaboration with patient and the patient's family
- b) Indicate the appropriate diagnostic tools to evaluate patients with cancer for accurate and optimal staging, in a resource- effective and ethical manner.
- Laboratory tests
 - Imaging modalities
 - Interventionist studies such as endoscopies or biopsies
- c) Perform a consultation effectively
- Demonstrate the use of all clinical competencies required to meet the health care needs for the people they serve
 - Establish well-documented assessments and recommendations in written and/or oral form
 - Demonstrate medical expertise in situations other than patient care, such as providing expert legal testimony or advising governments.
- d) Acquire knowledge [about the natural](#) history of diseases, including risk factors, genetic predisposition and prognostic variables.
- e) Know the indications of different therapeutic strategies.
- f) Acquire the knowledge for screening and preventive methods for different diseases.
- g) Detect and treat emergencies secondary to diseases or therapies administered.
- h) Seek appropriate consultation from other health professionals, recognizing the limits of their own expertise.

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1.2.1.4 *Health Promotion*

Use expertise and influence to promote health and well-being of individual patients, communities and populations.

- a) Respond to community health needs
- Identify the determinants of health in the population, including but not limited to environmental/occupational exposures, genetic and socio-economic factors, and barriers to access to care and resources.
 - Identify appropriate services in the health and social systems that are available to the patient with cancer.
 - Identify vulnerable subgroups and respond appropriately
- b) Promote individual and community health
- Describe an approach to implementing changes in risk factors
 - Acquire the knowledge of how public policy impacts on the health of the population, including but not limited to screening and prevention for cancers

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- Describe the ethical and professional issues inherent in health promotion, including but not limited to social justice and autonomy
- Appreciate the conflict inherent between gold-standard health advocate and available resources.

1.2.1.5 *Team work*

It is necessary to work effectively within a interprofessional health care team to achieve the optimal patient care.

- a) Participate actively in interprofessional health care teams
 - Establish multidisciplinary management plans in collaboration with radiation oncologists, surgeons, radiologists, pathologists and other colleagues involved in cancer patient care.
 - Recognize and respect the diverse roles, responsibilities and competencies of other professionals
 - Participate in interprofessional team meetings, including but not limited to tumor boards.
 - Respect team ethics, including confidentiality, resource allocation and professionalism.
 - Demonstrate leadership in a health care team.
- b) Resolve interprofessional conflicts
 - Manifest a respectful attitude towards colleagues and members of an interprofessional team, to prevent conflicts.
 - Employ collaborative negotiation to resolve conflicts

1.2.1.6 *Bioethical issues*

A basic competency is the integration of ethical and legal rules into the patients care.

- a) Know the Good Clinical Practice guidelines.
- b) Be familiar with the ethical principles of respect for autonomy, beneficence, non-maleficence, justice and truthfulness.
- c) Be familiar with key ethical principles and local legal status that guide limits of treatment at the end of life.
- d) Be familiar with guidelines that define conflict of interest.
- e) Know guidelines and local statutes that regulate data protection and privacy rights, especially regarding genetic-information, and tissue-banking.
- f) Be familiar with principles that regulate the ethical conduct of clinical trials.
- g) Be able to determine the optimal combination of clinical benefit, toxicity and cost, for a specific clinical indication appreciating the cost-effectiveness.

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1.2.1.7 *General Drug Management*

A comprehensive knowledge of general pharmacology is fundamental for safe prescribing and evidence-supported management in cancer patients. The following competencies must be highlighted:

- a) Know and prevent adverse events and interactions between commonly used drugs.
- b) Be familiar with the diagnosis and treatment of more frequent adverse reactions induced by drugs.
- c) Be able to identify comorbidities that can influence the indication and dosage of drugs in clinical practice such as renal failure or liver impairment.
- d) Be able to manage drugs in special and fragile patients such as pregnant or lactating women or elderly patients.
- e) Understand and manage the rational use of drugs, the concept of cost-benefit and the appropriate application of active principles and/or generic drugs.
- f) Be familiar with the adverse events reporting system.
- g) Apply ethical issues to drugs prescription.

1.2.1.8 *Scholarly function and Scientific Communication*

A commitment with learning, divulgation, application and translation of medical knowledge must be demonstrated.

- a) Enhance professional activities through ongoing learning:
 - Integrate constantly new learning into practice
 - Be able to demonstrate and document the learning process
 - Be able to identify gaps in knowledge and to establish learning strategies through a maintenance competence program.
- b) Facilitate the learning of patients, families, students, residents and other health professionals:
 - Provide clear information regarding treatment, including side effects, dosing and schedules, and interactions with other active medications.
 - Recognize the importance of maintain an appropriate communication according to the educational level, culture and language preference.
 - Identify collaboratively the learning need of others.
 - Select effective teaching strategies to facilitate others' learning.
- c) Contribute to the development, divulgation and translation of new knowledge:
 - Know principles of academic research
 - Conduct a systematic search for evidence, selecting the appropriate method to address scientific questions.
 - Appreciate the relevance of disseminating findings of a study.

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1.2.1.9 *Principles of Research and Statistics*

A strong background in research principles must be required to ensure an adequate understanding of medical evidence.

- a) Be able to formulate research hypothesis and evaluate critically clinical information, according to evidence-based scientific methodology.
- b) Dominate scientific and bioethical principles of the biomedical research and participate actively developing research projects.
- c) Know how to design, collect data and perform basic statistical analysis being able to use specific statistical programs.
- d) Be able to perform oral presentations in scientific meetings.
- e) Acquire the indispensable methodology to publish articles in scientific journals.
- f) Be able to perform an adequate bibliographic search.
- g) Be able to perform a critical scientific article reading, including the interpretation of systematic-reviews or meta-analysis, and extrapolate solid conclusions to apply in clinical practice.
- h) Be familiar with the basic principles of evidence-based clinical practice.

1.2.1.10 *Management of Clinical Information*

An adequate use of clinical information sources is fundamental, for that reason it is required to:

- d) Be able to critically evaluate medical information and sources to apply it into the clinical practice decisions.
- e) Be updated in technologies used for information and communication in the clinical career.
- f) Know the general characteristics and basis of the health system information support and be able to interpretate the most frequently used indicators.
- g) Be able to use the different medical records.
- h) Dominate the basic principles for disease codification and classification according to international nomenclatures.

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1.2.2 NUCLEAR COMPETENCIES

This part defines the competencies to be acquired during the nuclear training period

1.2.2.1 *Cardiovascular diseases*

- a) Know main symptoms and signs of cardiovascular diseases to perform an adequate diagnosis.
- b) Be able to interpret electrocardiograms and analytical alterations related to cardiovascular diseases.
- c) Know the indications of the available diagnostic tools: radiological and invasive studies.
- d) Understand the relevance of early diagnosis and treatment of cardiovascular factor risks.
- e) Be able to manage initially cardiorespiratory arrest, shock status, hypertension, heart failure, syncope, arrhythmias, valvulopathies, endocarditis, pericardial diseases, arterial and venous vasculopathies, lymphedema and lymphangitis.
- f) Know the indications, effectiveness and risks of different therapeutic options.
- g) Know the role of cardiac rehabilitation
- h) Recognize the indication and importance of referring patients with cardiovascular diseases to a specialist with the aim of offering the most adequate management.

1.2.2.2 *Endocrinologic diseases*

- a) Know main symptoms and signs of endocrine, nutritional and metabolic diseases to perform an adequate diagnosis.
- b) Be able to interpret analytical alterations related.
- c) Know the indications of the available diagnostic tools.
- d) Be able to evaluate the nutritional status of patients and the indication of nutritional support.
- e) Understand the relevance of early diagnosis and treatment of associated factor risks.
- f) Be able to manage diabetes mellitus, obesity, dyslipidemia, thyroid dysfunction, hyperparathyroidism, adrenal dysfunction.
- g) Know the indications, effectiveness and risks of different therapeutic options.
- h) Recognize the indication and importance of referring patients when necessary to a specialist with the aim of offering the most adequate management.

1.2.2.3 *Urinary diseases*

- a) Know main symptoms and signs of urinary system diseases to perform an adequate diagnosis.
- b) Be able to interpret analytical alterations related.
- c) Know the indications of the available diagnostic tools.
- d) Understand the relevance of early diagnosis and treatment of associated factor risks.
- e) Be able to diagnose and initiate treatment of renal colic, prerenal and obstructive renal failure, urinary retention, urinary infections, neurogenic bladder and testicular diseases.
- f) Know the indications, effectiveness and risks of different therapeutic options.

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- g) Recognize the indication and importance of referring patients when necessary to a specialist with the aim of offering the most adequate management.

1.2.2.4 Digestive diseases

- a) Know main symptoms and signs of gastrointestinal tract, liver and pancreatic diseases to perform an adequate diagnosis.
b) Be able to interpret analytical alterations related.
c) Know the indications of the available diagnostic tools, including endoscopic studies.
d) Understand the relevance of early diagnosis and treatment of associated factor risks.
e) Be able to diagnose and initiate treatment of gastroesophageal reflux, peptic ulcer and dysfunctional diseases, gastrointestinal bleeding, celiac disease, acute gastroenteritis, diverticulitis, hemorrhoids and anal fissures, biliary diseases, acute pancreatitis, hepatitis, intestinal ischemia and bowel obstruction.
f) Know the indications, effectiveness and risks of different therapeutic options.
g) Recognize the indication and importance of referring patients when necessary to a specialist with the aim of offering the most adequate management.
h) Understand the role of endoscopic treatment.

1.2.2.5 Infectious diseases

- a) Know main symptoms and signs of infectious diseases to perform an adequate diagnosis.
b) Be able to interpret analytical alterations related, especially microbiological studies.
c) Know the indications of the available diagnostic tools.
d) Understand the relevance of early diagnosis and treatment of associated factor risks.
e) Be able to diagnose and initiate treatment of infectious diseases, sepsis and septic shock.
f) Know the indications, effectiveness and risks of different therapeutic options.
g) Recognize the indication and importance of referring patients when necessary to a specialist with the aim of offering the most adequate management.

1.2.2.6 Rheumatologic diseases

- a) Know main symptoms and signs of musculoskeletal system and autoimmune diseases to perform an adequate diagnosis.
b) Be able to interpret analytical alterations related, including characteristics of articular liquids.
c) Know the indications of the available diagnostic tools.
d) Understand the relevance of early diagnosis and treatment of associated factor risks.
e) Be able to diagnose and initiate treatment of arthrosis and arthritis, musculoskeletal pain and osteoporosis.
f) Know the indications, effectiveness and risks of different therapeutic options.
g) Appreciate the role of rehabilitation
h) Recognize the indication and importance of referring patients when necessary to a specialist with the aim of offering the most adequate management.

Commenté [1]: Dr Chantal de Galocsy
(Gastroenterology Section)

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1.2.2.7 *Nervous system diseases*

- a) Know main symptoms and signs of neurological diseases to perform an adequate diagnosis.
- b) Be able to interpret analytical alterations related.
- c) Know the indications of the available diagnostic tools.
- d) Understand the relevance of early diagnosis and treatment of associated factor risks.
- e) Be able to diagnose and initiate treatment of coma, seizures, stroke, meningitis and encephalitis, headaches, peripheral nervous disorders and cognitive impairment.
- f) Know the indications, effectiveness and risks of different therapeutic options.
- g) Appreciate the role of rehabilitation.
- h) Recognize the indication and importance of referring patients when necessary to a specialist with the aim of offering the most adequate management.

1.2.2.8 *H&N diseases*

- a) Know main symptoms and signs of H&N disorders to perform an adequate diagnosis.
- b) Be able to interpret analytical alterations related.
- c) Know the indications of the available diagnostic tools.
- d) Identify associated factor risks.
- e) Be able to diagnose and initiate treatment of sinusitis, otitis, tonsillitis, vertigo, epistaxis, tinnitus, hearing loss and dysphonia.
- f) Know the indications, effectiveness and risks of different therapeutic options.
- g) Recognize the indication and importance of referring patients when necessary to a specialist with the aim of offering the most adequate management.

1.2.2.9 *Ophthalmologic diseases*

- a) Know main symptoms and signs of ocular diseases to perform an adequate diagnosis.
- b) Be able to interpret analytical alterations related.
- c) Know the indications of the available diagnostic tools.
- d) Identify associated factor risks.
- e) Be able to diagnose and initiate treatment of red eye, glaucoma, herpes zoster, blepharitis, acute conjunctivitis and reduction of visual acuity.
- f) Know the indications, effectiveness and risks of different therapeutic options.
- g) Recognize the indication and importance of referring patients when necessary to a specialist with the aim of offering the most adequate management.

1.2.2.10 *Dermatologic diseases*

- a) Know main symptoms and signs of skin diseases to perform an adequate diagnosis.
- b) Be able to interpret analytical alterations related.
- c) Identify associated factor risks.
- d) Be able to diagnose and initiate treatment of burns, pruritus, psoriasis, dermatitis, acne, hyperpigmented lesions, rash, infections and ulcers.
- e) Know the indications, effectiveness and risks of different therapeutic options.

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- f) Recognize the indication and importance of referring patients when necessary to a specialist with the aim of offering the most adequate management.

1.2.2.11 Haematologic diseases

- a) Know main symptoms and signs of blood disorders to perform an adequate diagnosis.
- b) Be able to interpret analytical alterations related.
- c) Know the indications of the available diagnostic tools.
- d) Know the indications of transfusions.
- e) Understand the role of anticoagulants and antiplatelets.
- f) Understand the relevance of early diagnosis and treatment of associated factor risks.
- g) Be able to diagnose and initiate treatment of anemia, thrombosis and hemorrhagic disorders.
- h) Know the indications, effectiveness and risks of different therapeutic options.
- i) Recognize the indication and importance of referring patients when necessary to a specialist

1.2.2.12 Respiratory diseases

- a) Know main symptoms and signs of respiratory diseases to perform an adequate diagnosis.
- b) Be able to interpret analytical alterations related.
- c) Know the indications of the available diagnostic tools, including functional respiratory studies as spirometry.
- d) Understand the relevance of early diagnosis and treatment of associated factor risks.
- e) Be able to diagnose and initiate treatment of hemoptysis, chronic obstructive pulmonary disease, asthma, pneumonia, pneumothorax and pleural effusion, pulmonary thromboembolism, acute and chronic respiratory insufficiency and pulmonary arterial hypertension.
- f) Know the indications of oxygen therapy and mechanical ventilation.
- g) Understand the relevance of respiratory rehabilitation.
- h) Know the indications, effectiveness and risks of different therapeutic options.
- i) Recognize the indication and importance of referring patients when necessary to a specialist

1.2.2.13 Mental disorders

- a) Know main symptoms and signs of mental disorders to perform an adequate diagnosis.
- b) Be able to interpret analytical alterations related.
- c) Know the indications of the available diagnostic tools.
- d) Understand the relevance of early diagnosis and treatment of associated factor risks.
- e) Be able to diagnose and initiate treatment of anxiety, sleep disorders, depression, conduct disorders, psychotic and personality disorders.
- f) Understand the relevance of rehabilitation.
- g) Know the indications, effectiveness and risks of different therapeutic options.
- h) Recognize the indication and importance of referring patients when necessary to a specialist

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1.2.2.14 Geriatrics

- a) Know main symptoms and signs of aging.
- b) Be able to evaluate geriatric patients.
- c) Be familiar with main geriatric syndromes and their management, considering **multi**morbidity and polypharmacy.
- d) Know pharmacokinetic and pharmacodynamic alterations related to aging, to use adequate dosing of drugs in these setting.
- e) Be familiar with the evaluation of dependency grade and functional limitation.
- f) Be able to evaluate caregivers' burden.
- g) Be able to diagnose **frailty**, and initiate preventive treatment in **frail** patients.
- h) Recognize the indication and importance of referring patients when necessary to a specialist

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1.2.2.15 Allergic diseases

- a) Know main symptoms and signs of allergic diseases to perform an adequate diagnosis.
- b) Be able to interpret analytical alterations related.
- c) Know the indications of the available diagnostic tools.
- d) Understand the relevance of early diagnosis and treatment of associated factor risks.
- e) Be able to diagnose and initiate treatment of asthma, anaphylaxis, skin allergies and rhino-conjunctivitis.
- f) Know the indications, effectiveness and risks of different therapeutic options.
- g) Recognize the indication and importance of referring patients when necessary to a specialist

1.2.2.16 Emergencies

- a) Know main symptoms and signs of critical patients with vital risk.
- b) Be able to interpret analytical alterations related.
- c) Know the indications of diagnostic tools in this setting.
- d) Be familiar with emergency triage.
- e) Be able to diagnose and initiate treatment of shock, cardiorespiratory arrest, acute thoracic pain, coma, seizures, acute respiratory insufficiency, polytrauma patient, severe electrolytic alterations, intoxication, acute abdomen, gastrointestinal bleeding.
- f) Dominate cardiorespiratory reanimation techniques.
- g) Recognize the indication and importance of referring patients when necessary to a specialist and the relevance of a multidisciplinary approach in these patients.

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1.2.3 SPECIFIC COMPETENCIES

These are the specific competencies to be acquired during the training in Medical Oncology

1.2.3.1 *Scientific basis of cancer.*

A deep knowledge of most common alterations leading to cancer development must be acquired.

1.2.3.1.1 Cancer biology.

A medical oncologist should know the complexity of cancer cell biology and be able to apply newly proposed and existing models based on molecular mechanisms of disease and action of specific drugs.

- a) Acquire mechanisms that explain tumor progression from the phases and checkpoints of the cells cycle, and the relevance of oncogenes, tumor suppressor genes and DNA repair systems.
- b) Understand the principles of epigenetics, the tumor-stroma interactions and the cellular heterogeneity present in the host tissue and the role of interacting networks involved in signaling and metabolism to maintain homeostasis.
- c) Learn cancer genomics, and the control of gene expression by transcriptional and epigenetics process
- d) Understand the mechanisms of drug resistance
- e) Know the basis of biochemical and molecular biological techniques.

1.2.3.1.2 Tumor immunology.

It is essential that the trainee acquire the basic knowledge of the components of the immune system, as well as the relations between the tumor and the host, to understand the different immunotherapy strategies.

- a) Be able to differentiate cellular and humoral immunity
- b) Be able to differentiate innate and adaptive immunity
- c) Understand the different parts of immunoglobulins as molecules, and differentiate classes and functions.
- d) Understand the components of the T-cell receptor complex and co-stimulatory signals involved in T cell activation, the function of macrophages and natural killer cells.
- e) Know the microenvironment-produced cytokines that promote tumor growth and affect the immune response.
- f) Understand the role and differences between the two types of major histocompatibility complex classes: MHC 1 and 2.
- g) Be familiar with the process of cancer immuno-editing.
- h) Be updated regarding the basic mechanisms of action of tumor immunotherapeutic agents, including checkpoint inhibitors, adoptive immunotherapies (chimeric antigen receptor-expressing autologous T-cells= CAR-T, tumor infiltrating lymphocytes = TILs,etc.) and vaccines.

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1.2.3.1.3 Cancer Prevention.

A medical oncologist should be able to identify population-clinical problems associated with cancer and use their expertise and influence to promote health and well-being of individual patients, communities and populations.

- a) Be updated at cancer statistics for main demographic groups
- b) Understand the impact of cancer prevalence and survival
- c) Know the accuracy of screening tests and differentiate sensitivity and specificity.
- d) Be familiar with the significance of efficacy and effectiveness as end-points in clinical trials.
- e) Know screening indications, as well as limitations of screening studies and consequences as overdiagnosis.
- f) Identify risk factors for cancer in the population

1.2.3.1.4 Hereditary cancer.

A medical oncologist must be familiar with hereditary cancer syndromes associated with the presence of germline gene mutations to identify those individuals that fulfil criteria for germline genetic testing.

- a) Understand the indications, impact and relevance of genetic counselling and the identification of germline aberrations for individuals and families.
- b) Be updated in early cancer detection and prevention actions to apply in high-risk families.
- c) Be able to identify patient's perspective for genetic testing and assess on the potential benefits, limitations and risk before testing, including the possibility of finding variants of unknown significance (VUS)
- d) Know different assays and genetic mechanisms associated to hereditary cancer syndromes

1.2.3.2 *Cancer patient management.*

Medical oncologists must be able to evaluate and treat patients' comorbidities related to cancer and the toxicities derived from therapies.

1.2.3.2.1 Pathology and Molecular Pathology.

A comprehensive understanding of pathological diagnosis is needed to know its significance and associated management, including:

- a) Nomenclature of neoplasia and grading schemes in different tumor types.
- b) Know the applications for immunohistochemistry and limitations of interpretation.
- c) Know the indications to request a biopsy, and the different procedures to obtain it.
- d) Know the procedures involved in biobanking, including ethical and storage considerations.
- e) Be able to to discuss pathology reports in a multidisciplinary team.
- f) Be able to use pathology reports and additional biomarkers studies to formulate the best treatment for the patient.
- g) Understand the different genetic and epigenetic alterations involved in tumor growth and dissemination
- h) Be updated in the main molecular techniques and their clinical utility, such as NGS, being aware of costs and limitations in interpretation, according to established levels of evidence.

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1.2.3.2.2 Laboratory Medicine.

A medical oncologist must be able to use laboratory diagnostic testing for the diagnosis and follow-up of patients with cancer.

- a) Know different laboratory testing for diagnosis, staging, treatment-decision making and follow up.
- b) Understand the role of prognostic and predictive biomarkers and their clinical value.
- c) Be familiar with the interpretation of laboratory findings involved in the management of cancer patients, including particularly cytogenetic and molecular analyses.
- d) Identify which clinical materials are required for specific diagnostic tests.

1.2.3.2.3 Personalized cancer medicine.

A medical oncologist must be able to integrate biomarker analysis into the treatment-decision process to select therapies based on individual patient's marker signatures.

- a) Understand the terminology for high-throughput Omics technologies, including genomics, proteomics, transcriptomics, epigenomics, and metabolism.
- b) Know the principles of targeted (PCR, FISH, IHC) and non-targeted (e.g., NGS) technologies for biomarker molecular analysis.
- c) Be familiar with the commonly targetable mutations in the different cancer forms (EGFR, ALK, ER, HER-2, B-raf...) and guided therapeutic strategies.

1.2.3.2.4 Staging procedures.

An adequate trainee in clinical cancer staging will be needed for the management of the oncological patient, including:

- a) Knowledge of TNM classification tumor system
- b) Understand the different systems of staging for tumor types, as the Union for International Cancer Control (UICC) Classification for colorectal cancer, or the International Federation of Gynecology and Obstetrics (FIGO) for gynecological tumors.
- c) Be able to correlate stage and prognosis
- d) Understand the differences in treatment choice based on staging.

1.2.3.2.5 Imaging.

A medical oncologist must use adequately and consistently imaging techniques as fundamental tools for cancer patient management, and they must:

- a) Know principles and technical limitations of diagnostic image techniques, and their associated costs
- b) Be awareness with safety-related issues concerning CT-scan and contraindications to MRI.
- c) Understand the usage of image-guided diagnosis and therapeutic interventions, considering limitations and potential complications.
- d) Be familiar with pre-test probabilities and impact of imaging tests on patient management.
- e) Know the role and indication of different imaging tests.

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- f) Be able to interpret breast imaging reporting data system (BI-RADS) and prostate imaging reporting data system (PI-RADS).
- g) Dominate the Response Evaluation Criteria in Solid Tumors (RECIST)
- h) Be familiar with cancer-specific treatment response criteria as the Choi Response Criteria for gastrointestinal stromal tumors (GIST) or iRECIST criteria for immunotherapies.
- i) Be updated in molecular imaging, being familiar with the standard molecular imaging tracers and know the indications for single-photon emission computed tomography (SPECT) and positron emission tomography (PET) scans for the different tumor types.

1.2.3.2.6 Medical Therapy of Cancer.

A medical oncologist must be able to evaluate, indicate treatment and counsel patients who should receive systemic therapy, including chemotherapy, hormonal therapy, biological therapy, targeted therapy or immunotherapy, for their specific cancer.

- a) Be updated in the existence of the different types of therapeutic agents.
- b) Know the classification of an anticancer agent as cytotoxic, hormonal, biological, targeted agent or immunotherapy.
- c) Dominate the specific mechanisms of action of an individual anticancer agent.
- d) Understand the role of biological therapy in the management of patients with malignancies.
- e) Understand the key clinical pharmacology principles of anticancer agents, including absorption, distribution, metabolism and clearance/elimination.
- f) Be updated in main clinical indications for an individual anticancer agent and know the recommended dosing
- g) Know interactions between food and also drug-drug interactions.
- h) Dominate main side effects associated with an individual anticancer agent.
- i) Be able to adjust dosing of anticancer agents in cases of liver and/or kidney dysfunction.
- j) Be familiar with unconventional patterns of response occur with immunotherapies including late responses or pseudo-progression.
- k) Be updated in the use of molecular biomarkers for specific anticancer drugs.
- l) Be updated in new registered anticancer agents and their indication.

I Chemotherapy

- a) Understand the basic principles of chemotherapy including mechanism of action, dosage methods, scheduling and administration.
- b) Be familiar with chemotherapy medication preparation, safe handling and storage.
- c) Be familiar with chemotherapy protocols commonly used in clinical practice.
- d) Be updated in the relevant research published evidence, understanding the results of the major randomized trials that have influenced currently the use of traditional therapy.
- e) Dominate adverse effects and toxicities associated with chemotherapy including early identification, ongoing monitoring, principles of prevention and management.
- f) Understand the mechanisms of resistance identified for cytotoxic chemotherapy agents.
- g) Know the role of intrathecal chemotherapy in malignant diseases.

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II Biological Therapy

- Understand the basic principles of biological therapies including mechanism of action, dosage methods, scheduling and administration.
- Know the different biological therapy options for the management of patients with malignancies, comprising cytokines and haemopoietic growth factors.
- Be updated in the relevant research published evidence, understanding the results of the major randomized trials that have influenced currently the use of biological therapy.
- Dominant adverse effects and toxicities associated with biological therapy including early identification, ongoing monitoring, principles of prevention and management.
- Understand the mechanisms of resistance identified for biological agents.

III Immune Therapy

- Understand the basic principles of immunotherapy including mechanism of action, dosage methods, scheduling and administration.
- Know the different types of immunotherapies available for the management of patients with malignancies: from antibodies to cellular therapy.
- Be updated in the relevant research published evidence, understanding the results of the major randomized trials that have influenced currently the use of immunotherapy.
- Be familiar with the unique spectrum of immune-related toxicity and dominant early identification, ongoing monitoring, principles of prevention and management.
- Be aware that unconventional patterns of response occur with immunotherapies including late responses or regression after progression.
- Understand the mechanisms of resistance identified for immunotherapy.
- Appreciate that immunotherapy can achieve responses of long duration.
- [In case of side-effects consider a concertation with involved specialists \(for instance Endocrinologist, GastroHepatologist, etc\)](#)

1.2.3.2.7 Cancer Surgery and Radiation

A complete knowledge of treatment modalities is essential for medical oncologist trainees.

I Surgical oncology

A medical oncologist must develop an understanding of the indications and contraindications of oncological surgery by interacting with surgeons.

- Be updated in the availability of the different diagnostic procedures.
- Know prognostic factors involved in oncological surgery
- Be able to evaluate a patient for suitability for surgery and identify associated risks and benefits, and also postoperative complications.
- Be familiar with the indications for organ preservation, reconstructive surgery, and the sequencing of surgery with other treatment modalities.
- Be updated in new surgical techniques and technical device
- Understand the role of surgery in metastatic and palliative setting.
- Appreciate the importance of multimodality approach in cancer patients at initial presentation of the patient's disease and interact with surgeons in tumour boards.

Commenté [2]: Dr Chantal de Galocsy
(Gastroenterology Section)

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(E.U.)

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II Radiation oncology

A medical oncologist must develop an understanding of the indications and contraindications of radiation therapy by interacting with radiation oncology specialists.

- a) Be updated in the basic principles of radiation biology, including the effects of time, dose, fractionation and type of radiation.
- b) Be updated in basic principles of external beam therapy, brachytherapy and radionuclide therapy.
- c) Understand the indications for treatment and identify associated risks/benefits.
- d) Understand the benefits and toxicity of curative and palliative radiation treatment.
- e) Identify acute and late complications of radiation treatment.
- f) Know the differences in radiation tolerance of target tissues, and risks of re-irradiation based on normal tissue tolerance limits.
- g) Dominate the interactions between radiation and systemic drugs.
- h) Understand the interaction of radiation therapy on surgery in the preoperative and postoperative settings.
- i) Be updated in relevant published research evidence of the results of major randomized trials that influence present practice, and ongoing trials of radiation oncology and systemic therapy.
- j) Be updated in national/international therapeutic guidelines.
- k) Recognize the importance of multimodality approach in cancer patient

1.2.3.2.8 Cancer treatment-related adverse events

A medical oncologist must be able to evaluate, anticipate, diagnose and treat complications and toxicities of anticancer therapies.

- a) Be familiar with the complications/toxicities associated to different anticancer therapies and expected frequency
- b) Be updated in the therapeutic management of adverse events, including pharmacological and non-pharmacological strategies.
- c) Understand the role of other healthcare professionals in the diagnosis and management of anticancer therapy toxicities.
- d) Dominate prophylactic strategies that can reduce and minimize the frequency and/or severity of complications/toxicities.
- e) Be familiar with mechanisms involved in adverse events.
- f) Be familiar with drug interactions contributing to toxicities.
- g) Understand the psychological impact of treatment related adverse events and the supportive measures available.
- h) Understand the impact of dose delays or modifications related to toxicities and how they impact in future anticancer therapy and recovery for the patient.
- i) Be familiar with scales to measure cancer treatment related adverse events (eg. CTCAE criteria)

1.2.3.2.9 Symptomatic, palliative and continuous care.

A medical oncologist must evaluate and provide supportive care to patients with cancer from the time of diagnosis until death or until rehabilitation issues have been successfully managed.

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I Symptomatic management

A complete knowledge of common symptoms of malignant disease must be known, including:

- a) Understanding pathophysiology of malignant disease symptoms
- b) Dominate common side effects associated with cancer and its treatment and identify oncological emergencies:
 - Hematological events: infections and neutropenia. Identify patient risk factors and use adequately antibiotics and growth factor support. Understand the relevance of prophylaxis and early treatment in febrile neutropenia.
 - Hematological events: anemia and thrombocytopenia. Identify causes of anemia and know the indications of transfusions/growth factor support, and possible associated complications.
 - Thrombosis prophylaxis and management.
 - Lymphedema prophylaxis and management.
 - Cardiovascular disease-related complications and cardiac toxicity management of chemotherapeutic and targeted agents.
 - Superior/inferior vena cava syndrome management
 - Pulmonary toxicity related to chemotherapeutic and targeted agents.
 - Management of malignant effusions (pericardial, pleural and ascites).
 - Indication of appropriate respiratory supportive treatment.
 - Prevention, diagnosis and management of oral complications (dental, hyposalivation, xerostomia, mucositis, jaw osteonecrosis)
 - indication for prophylaxis and importance of optimising dental health including extracting teeth prior to certain treatments
 - Gastrointestinal related complications and toxicity: management of nausea and vomiting, diarrhea and constipation management, indication of prophylaxis.
 - Symptomatology and treatment of liver toxicities.
 - Symptomatology and management of tumor-associated fistulas.
 - Understand the role of nutritional support, limitations and toxicities.
 - Urological related complications and toxicity: renal toxicities, ureteric obstruction, incontinence, hematuria, urethral obstruction.
 - Gynecological related complications and toxicity: malignant intestinal obstruction, vaginal bleeding, sexual dysfunction.
 - Neurological related complications and toxicity: headache, seizures, encephalopathy, cognitive impairment, peripheral neuropathy.
 - Eye symptoms and toxicity: cataract, glaucoma, blepharitis.
 - Reproductive disease-related complications and toxicity: menopausal symptoms and long-term effects of hypogonadism in males and females, understanding of causes of infertility related to antineoplastic therapies and indication of fertility preservation strategies, sexual complications.
 - Skin related complications and toxicity prevention and management. Identification of chemotherapeutic agents causing hair loss.
 - Extravasation: knowledge of common vesicant chemotherapeutic agents, and management.
 - Endocrine and metabolic related complications and toxicity: hypopituitarism, hypothyroidism, adrenal insufficiency, tumor lysis syndrome, electrolyte disturbances (hypomagnesaemia, hypercalcemia) and tumor-related fever.
 - Bone disease related complications and toxicities management, preventive and treatment strategies for skeletal events such as spinal cord compression.

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- i) Supportive care in special subpopulation of geriatric patients
 - Evaluation of elderly patients in multidisciplinary teams.
 - Understand **multy**morbidity and polypharmacy in the elderly patient.
 - Management of complications and toxicities in high risk and **frail** elderly patients.
- j) Paraneoplastic syndromes understanding and management.

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II Palliative care

A medical oncologist must be able to screen, prevent and manage symptoms of patients with cancer and effectively communicate patients and family's understanding of illness, prognosis, end-of-life and its preparation. These competencies should be acquired:

- a) Screen patients for common symptoms and use scales for evaluate their severity.
- b) Understand main components of cancer symptoms and how to make a differential diagnosis.
- c) Be updated in the pharmacology and toxicity of medications used for the control of main symptoms, and also with non-pharmacological interventions as counselling, nursing or physical therapy.
- d) Be familiar with the evaluation and management of the complications of advanced metastatic cancer.
- e) Understand the decisional process for invasive treatments, weighing benefit and burden of treatments in respect of the patient's prognosis, state and desires, and end-of-life care.
- f) Understand the roles and burdens of family caregivers, respect culturally-based preferences of patients and their families.
- g) Identify causes of burnout and potential approaches to prevent it.
- h) Understand the management of symptoms and syndromes at end-of-life including dyspnea, pain, nausea, diarrhea, fatigue, weakness, anorexia, cachexia, seizures, delirium, anxiety, and depression.
- i) Be familiar with the indications and limitations of artificial nutrition and hydration at end-of-life.
- j) Understand the legacy work, legal preparation, premortal grief, post mortal caregiver role and place of death in the complex end-of life process.
- k) Be trained in conducting difficult conversations with patient and families.
- l) Be familiar with the role of multiple disciplines in the care of patients with advanced cancer.

III Continuous care

A medical oncologist is a nuclear component of the integral and multidisciplinary team care of cancer patients. This includes biological, psychological, familial, occupational and social environment from the diagnosis of cancer, and collaborating with primary care physicians and the specialists.

- a) Understand the concept of continuous care as key point of the oncological patient management.
- b) Understand the concept of shared care of the cancer patient and its varying role during the clinical course
- c) Know the primary care and health professionals, and the different specialists involved in continuous care for cancer patients and maintain a coordinated network.
- d) Be familiar with different options available to support patient in any phase of the disease

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- e) Be able to identify needs and desires from patients and focus therapeutic strategies to respond to those needs and desires.
- f) Understand and prepare a survivorship plan.
- g) Be aware of long term physical and psychological sequelae of cancer and cancer therapies, especially second cancers and increased cardiovascular risks.
- h) Understand the etiology and pathogenesis of second cancers, including the risks of second cancers associated with different types of cancer treatment.

1.2.3.2.10 Cancer management in special situations

A medical oncologist must acquire the knowledge to treat cancer patients in any clinical situation including:

- a) AIDS-associated malignancies
- b) Adolescents and young adults
- c) Pregnancy
- d) Geriatric oncology
- e) Patients with comorbidities

1.2.3.2.11 Psychosocial aspects of cancer

A medical oncologist should be able to perform and adequate evaluation of the patient's psychosocial needs:

- a) Know the epidemiology of psychosocial morbidity in patients with cancer.
- b) Be familiar with the need to screen emotional distress using simple instruments such as the National Comprehensive Cancer Network (NCCN) Distress Thermometer, quality of life assessment tools and survivorship assessment tools.
- c) Be familiar with protective and risk factors for psychosocial morbidity.
- d) Appreciate the consequence of psychosocial morbidity and its impact on clinical outcome.
- e) Understand the importance of communication skills and strategies to manage patient's concerns, goals and value to establish preferences and facilitate decision-making process along the disease trajectory.
- f) Know the role and refer to the appropriate member of the multidisciplinary team for further evaluation or treatment.

1.2.3.2.12 health and safety measures for caregivers

a medical oncologist should be familiar with the health hazards to caregivers of the different types of diagnostics and treatments (i.e. chemo-hazards, radiotherapy, ...) as well as the necessary measures of protection

1.2.3.3 *Diagnosis and therapeutics of tumors by localization:*

A medical oncologist must be trained in the care of specific cancer types and know the considerations for each malignant disease.

1.2.3.3.1 Head and neck cancer

- a) Be familiar with the epidemiology, etiology and risk factors associated to the disease
- b) Be familiar with the stage-based treatment approaches and diagnostic procedures.
- c) Understand the implications of the different subsites, histologic and biological

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subtypes for the selection of the adequate treatment strategy.

- d) Appreciate the importance of viral etiology in specific anatomical subsites.
- e) Understand the relevance of risk factor counselling and smoking cessation.
- f) ↓ Know the indications of surgery, radiation therapy, systemic treatments (chemo-, immuno-, targeted therapy, etc) but also their limitations and treatment-related sequelae.

Commenté [3]: "Hans-Peter Ulrich OMFS Section (after consultation with Germany oncology team including Prof. Müller-Richter)"

a supprimé: Know the indications of surgery, radiation therapy, systemic treatments (chemo-, immuno-, targeted therapy, etc) but also their limitations and treatment-related sequelae

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- g) Be familiar with preventive measures in preparation for multimodality treatment.
- h) Understand the role of chemotherapy and monoclonal antibodies in the management of patients with advanced disease.
- i) Be able to recognize patients at risk of airway obstruction.
- j) Be updated in treatment personalization opportunities and offer individualized treatment plans based on a global patient assessment including performance status, age, caregiver, nutritional situation, patient preferences.
- k) Understand the complications derived from treatment and disease progression to implement supportive care strategies.
- l) Know the role of rehabilitation therapies.
- m) Take care of the importance of multimodality approach.

1.2.3.3.2 Thoracic cancer

I Small-cell lung cancer

- a) Be familiar with the epidemiology, etiology and risk factors associated to the disease
- b) Be familiar with different presentations of SCLC and limited versus extensive presentation according to TNM staging.
- c) Know the indications and limitations of the different diagnostic tools.
- d) Know the existence and value of prognostic factors
- e) Be updated in the indication of available treatments and the correct sequence.
- f) Be familiar with the indication and value of surgery, radiation therapy and systemic treatments (chemo-, immunotherapy, etc), but also with their limitations.
- g) Understand the role of chemotherapy and therapeutic/prophylactic irradiation in the management of patients.
- h) Appreciate the relevance of initial response to determine patient survival.
- i) Know complications associated to disease progression and treatment-related.
- j) Be familiar with supportive and palliative strategies.
- k) Appreciate the importance of multimodality approach

II Non small-cell lung cancer

- a) Be familiar with the epidemiology, etiology and risk factors associated to the disease
- b) Be familiar with the different biological and pathological subtypes of NSCLC to select the appropriate treatment strategy.
- c) Know the different presentations of NSCLC and the tests available for staging.
- d) Know the indications and limitations of the available diagnostic tools.
- e) Be familiar with the existence and value of prognostic factors
- f) Be updated in the indication of available treatments and the correct sequence.
- g) Be familiar with the indication and value of surgery, radiation therapy and systemic treatments (chemo-, immune-, targeted therapy, etc), but also with their limitations.
- h) Understand the role of surgery, chemotherapy, immunotherapy, targeted therapy and radiation in the management of patients with localized and advanced disease.
- k) Identify complications associated to disease progression and treatment-related.
- i) Understand the relevance of treatment personalization opportunities based on molecular findings, such as epidermal growth factor receptor (EGFR) mutations, echinoderm microtubule-associated protein-like 4 (EML4) - anaplastic lymphoma kinas (ALK), Braf and ROS translocation and programmed death-ligand 1 (PDL1) expression (not exhaustive).

Commenté [4]: "Hans-Peter Ulrich OMFS Section (after consultation with Germany oncology team including Prof. Müller-Richter)"

Commenté [5R4]: If we accept that, we have to change in all kind of tumours

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- j) Be familiar with supportive and palliative strategies.
- k) Appreciate the importance of multimodality approach

III Mesothelioma

- a) Be familiar with the epidemiology, etiology and risk factors associated to the disease
- b) Know the implications of the extension of mesothelioma for the selection of therapy and adequate sequence.
- c) Be familiar with the different presentations and tests available for diagnosis.
- d) Appreciate morbidity and mortality associated with local invasion.
- e) Know the indications and limitations of the available diagnostic tools.
- f) Be familiar with the existence and value of prognostic factors.
- g) Be updated with the indication and value of surgical techniques, radiation therapy and systemic treatments (i.e. immunotherapy, chemotherapy), but also with their limitations.
- h) Understand the role of chemotherapy and radiation therapy in patients with advanced mesothelioma.
- i) Identify complications associated to disease progression and treatment-related.
- j) Be familiar with supportive and palliative strategies.
- k) Appreciate the importance of multimodality approach

IV Thymoma and thymic cancer

- a) Be familiar with the implications of the clinical, pathological and biological differences between thymoma and thymic cancer to select the adequate therapeutic strategy
- b) Appreciate the association of thymoma with multiple endocrine neoplasia (MEN) type 1.
- c) Know the indications and limitations of the available diagnostic tools.
- d) Be familiar with the clinical and biological assessment of the most frequent thymoma-associated autoimmune disorders, especially myasthenia gravis.
- e) Be familiar with the existence and value of prognostic factors, especially the staging systems and the criteria that define respectability
- f) Know the indications of surgery and postoperative radiotherapy for the treatment of resectable thymoma and thymic cancer.
- g) Dominate the principles and indications of chemotherapy and radical radiotherapy for the treatment of advanced disease.
- h) Understand the role of surgery, radiotherapy and systemic therapy to manage recurrent disease
- i) Be familiar with the principles of follow-up and the management of long-term implications related to autoimmune disorders.
- j) Be familiar with supportive and palliative strategies.
- k) Appreciate the importance of multimodality approach

1.2.3.3.3 Gastrointestinal cancer

I Esophageal cancer

- a) Be familiar with the epidemiology, etiology and risk factors associated to the disease
- b) Be familiar with the implications of the biological and pathological subtypes of esophageal to select the adequate therapeutic strategy
- c) Know the pattern of metastasis
- d) Know the indications and limitations of the available diagnostic tools.

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- e) Understand the importance of cancer precursor lesions in the development of esophageal cancer.
- f) Be familiar with the evaluation of prognostic factors, specially the TNM staging system.
- g) Appreciate the principles of endoscopic management for early-stages.

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- h) Be updated in the multimodality approach of radiotherapy, chemotherapy and surgery in non-metastatic esophageal cancer. Understand that in some cases, tumors can be treated with chemotherapy and irradiation as curative strategy. Understand the role of neoadjuvant and perioperative treatment setting.
- i) Be updated in the role of chemotherapy for the management of patient with advanced tumors.
- j) Be familiar with hereditary cancer syndromes, the management of these families and the implications for individual patients.
- k) Understand the symptoms and complications derived from disease progression and treatment-derived.
- l) Be familiar with supportive and palliative strategies.

II Gastric cancer

- a) Be familiar with the epidemiology, etiology and risk factors associated to the disease
- b) Be familiar with the implications of the different biological and pathological gastric cancer subtypes to select the adequate treatment strategy.
- c) Appreciate regional differences in the incidence of gastric cancer.
- d) Recognition of specific lifestyle risk factors and premalignant conditions for gastric cancer.
- e) Know the pattern of metastasis
- f) Know the indications and limitations of the available diagnostic tools.
- g) Understand the importance of cancer precursor lesions in the development of gastric cancer.
- h) Be familiar with the evaluation of prognostic factors, specially the TNM staging system.
- i) Appreciate human epidermal growth factor receptor 2 (HER-2) as the only established biomarker guiding therapy for gastric cancer.
- j) Be updated in the multimodality approach of radiotherapy, chemotherapy and surgery in non-metastatic gastric cancer. Understand the role of neoadjuvant, perioperative and adjuvant treatment setting.
- k) Understand the role of systemic treatments (chemo-, immuno-, targeted therapy, etc) in the management of patients with advanced gastric cancer.
- l) Be familiar with hereditary cancer syndromes, the management of these families and the implications for individual patients.
- m) Understand the symptoms and complications derived from disease progression and treatment-derived.
- n) Be familiar with supportive and palliative strategies.

III Colon and rectal cancer

- a) Be familiar with the epidemiology, etiology and risk factors associated to the disease
- b) Be familiar with the implications of the different biological and pathological colorectal cancer subtypes to select the adequate treatment strategy.
- c) Know the indications and limitations of the available diagnostic tools.
- d) Be familiar with the evaluation of prognostic factors, specially the TNM staging system.
- e) Understand the importance of cancer precursor lesions and lifestyle risk factors.
- f) Be familiar with the indications and value of surgery, radiotherapy and chemotherapy in the adjuvant and neoadjuvant setting of colon and rectal cancer.
- g) Understand the role of surgery and other local ablational techniques in resectable liver and lung metastasis and the role of systemic treatments in borderline or

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- unresectable situations in order to achieve resectability.
- h) Understand the role of systemic treatments (chemo-, immuno-, targeted therapy, etc) in the management of patients with advanced disease.

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- i) Know the relevance of personalized medicine strategies based on molecular findings such as K-Ras, N-Ras or B-Raf mutations as well as MSI.
- j) Be familiar with hereditary cancer syndromes, the management of these families and the implications for individual patients.
- k) Understand the symptoms and complications derived from disease progression and treatment-derived.
- l) Be familiar with supportive and palliative strategies.

IV Anal cancer

- a) Be familiar with the epidemiology, etiology and risk factors associated to the disease
- b) Be familiar with the implications of the different stages of anal cancer to select the adequate treatment strategy.
- c) Understand the implication of human papilloma virus and the relevance of vaccination for the development of anal cancer.
- d) Understand the importance of cancer precursor lesions in the development of anal cancer and lifestyle risk factors.
- e) Know the pattern of metastasis
- f) Know the indications and limitations of the available diagnostic tools.
- g) Be familiar with the evaluation of prognostic factors, specially the TNM staging system.
- h) Be familiar with the indications and value of the multimodality approach of radiation therapy and chemotherapy in non-metastatic anal cancer.
- i) Know the role of surveillance protocols and the appropriate interval from the completion of radical radiation-chemotherapy to first restaging evaluation.
- j) Know the value of salvage surgery after primary definitive radio-chemotherapy in localized anal cancer.
- k) Understand the role of chemotherapy in the management of patients with advanced disease.
- l) Understand the complexity of anal cancer therapy in patients with active immunodeficiency virus (HIV) infections.
- m) Understand the symptoms and complications derived from disease progression and treatment-derived.
- n) Be familiar with supportive and palliative strategies.

V Hepatobiliary cancers

- a) Be familiar with the epidemiology, etiology and risk factors associated to the disease
- b) Be familiar with the implications of the different biological and pathological subtypes of hepatobiliary cancer to select the adequate treatment strategy.
- c) Know the pattern of metastasis
- d) Know the indications and limitations of the available diagnostic tools and tumor markers as α -fetoprotein and CA 19-9.
- e) Understand the role of endoscopic techniques to address biliary tract stenosis.
- f) Understand the importance of cancer precursor lesions in the development of hepatobiliary cancer and lifestyle risk factors.
- g) Be familiar with the evaluation of prognostic factors, specially the TNM staging system.
- h) Appreciate predisposing medical conditions for the development of hepatocellular and biliary cancers (viral infections, primary biliary sclerosis...)
- i) Perform oncogene panels for treatment stratification where appropriate (i.e. biliary

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cancers)

- j) Integrate clinical scoring systems like Child-Pugh, into treatment decision.
- k) Be familiar with the indication and value of the multimodality approach of surgery, loco-regional ablative techniques and systemic treatments (chemo-, immuno-, targeted therapy, etc) therapy in non-metastatic hepatobiliary cancer.
- l) [Collaborate with Gastro-Hepatologists.](#)

Commenté [6]: Dr Chantal de Galocsy
(Gastroenterology Section)

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- m) Understand the differences between bland embolization, chemo-embolization and radio-embolization as loco-regional interventional techniques.
- n) Understand the role of systemic treatments (chemo-, immuno-, targeted therapy, etc) in the management of patients with advanced disease.
- o) Be familiar with hereditary cancer syndromes, the management of these families and the implications for individual patients.
- p) Understand the symptoms and complications derived from disease progression and treatment-derived.
- q) Be familiar with supportive and palliative strategies.

VI Pancreatic adenocarcinoma

- a) Be familiar with the epidemiology, etiology and risk factors associated to the disease
- b) Be familiar with the implications of the different biological and pathological subtypes of pancreatic cancer to select the adequate treatment strategy.
- c) Know the pattern of metastasis
- d) Know the indications and limitations of the available diagnostic tools.
- e) Understand the role of endoscopic techniques to address biliary tract stenosis.
- f) Understand the importance of cancer precursor lesions in the development of pancreatic cancer and lifestyle risk factors.
- g) Be familiar with the evaluation of prognostic factors, specially the TNM staging system.
- h) Be updated with the indication and value of the multimodality approach of surgery and chemotherapy in non-metastatic pancreatic adenocarcinoma.
- i) Be familiar with the controversial role of radiotherapy in the postoperative setting and its established role in the palliative management of unresectable disease.
- j) Understand the role of chemotherapy and targeted therapy in the management of patients with advanced disease.
- k) Be familiar with hereditary cancer syndromes, the management of these families and the implications for individual patients.
- l) Understand the symptoms and complications derived from disease progression and treatment-derived.
- m) Be familiar with supportive and palliative strategies.

1.2.3.3.4 Breast cancer

- a) Be familiar with the epidemiology, etiology and risk factors associated to the disease
- b) Understand the existence of different molecular subtypes of breast cancer defined by genomic testing and immunohistochemistry analysis, and their implication in terms of prognosis and selection of appropriate therapies.
- c) Be aware of the existence of BRCA-related breast cancer and other tumour predisposition genes, and the implications for surveillance of carriers, diagnosis and specific treatment.
- d) Know indications and different modalities for screening, and also the evidence related to radiological tools.
- e) Know staging procedures for breast cancer.
- f) Understand the principles for chemoprevention, its indications and side effects.
- g) Understand the relevance of referring patients and their relatives for genetic counselling and the implications of BRCA or other tumour predisposition genes positivity in their management.
- h) Be familiar with the prognostic and predictive factors, including biological markers

a supprimé: awareness

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as HER-2 receptors expression.

- i) Be updated in the indication, modalities and limitations of surgery and radiotherapy for breast cancer.
- j) Dominate different types and regimens of systemic therapy: hormonal, chemotherapy, immunotherapy and targeted therapy.

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- k) Be updated in the indication of neoadjuvant and adjuvant therapies, including genomic tests to support it.
- l) Understand the different goals of treatment and their implications for early and advanced disease.
- m) Know the most common early and long-term side effects and their management.
- n) Understand the complications derived from disease progression
- o) Know options for fertility preservation.
- p) Recognize the existence of breast cancer in male patients.
- q) Understand the indications and limitations of follow-up procedures
- r) Be familiar with supportive and palliative strategies.
- s) Appreciate the importance of multimodality approach.

1.2.3.3.5 Gynecological cancer

I Ovarian cancer

- a) Be familiar with the epidemiology, etiology and risk factors associated to ovarian cancer.
- b) Understand the relevance of BRCA testing [and tests of other tumour predisposition genes](#), and the evidence for screening and preventive measures.
- c) Dominate the staging systems for ovarian cancer.
- d) Be familiar with the histological and molecular subtypes of ovarian cancer.
- e) Be updated in imaging modalities and serum markers to diagnose and manage patients with ovarian cancer.
- f) Understand the management of newly diagnosed ovarian cancer, including the evidence supporting debulking surgery (primary or interval) and indications for neoadjuvant and adjuvant chemotherapy.
- g) Understand the management of recurrent ovarian cancer: relevance of treatment-free interval and the different sensitivities to platinum, the role of surgery and targeted therapy options including antiangiogenics and PARP inhibitors.
- h) Be familiar with the management of non-epithelial ovarian cancers.
- i) Know different fertility preservation options.
- j) Appreciate the relevance of a multidisciplinary approach.

II Endometrial cancer

- a) Be familiar with the epidemiology, etiology and risk factors associated to endometrial cancer.
- b) Be updated in screening, prevention and surveillance protocols.
- c) Know the staging systems used in endometrial cancer.
- d) Be familiar with the histological subtypes and their prognosis.
- e) Understand the multidisciplinary management of newly diagnosed endometrial cancer: indications for surgery, radiotherapy and adjuvant systemic therapy, according to stage and risk groups.
- f) Understand the management of recurrent or advanced endometrial cancer: chemotherapy, immunotherapy, hormonal and other targeted therapy and the role of surgery and palliative for palliative procedures.
- g) Know different fertility preservation options.
- h) Appreciate the relevance of a multidisciplinary approach.
- i) [Be familiar with hereditary cancer syndromes, the management of these families and the implications for individual patients.](#)

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III Cervical cancer

- a) Be familiar with the epidemiology, etiology and risk factors associated to cervical cancer.
- b) Know staging procedures, including indications and limitations of imaging radiological tools for a complete diagnosis.
- c) Understand the role of primary surgery in early-stage disease and the indication of surgery versus chemo-radiation considering post-treatment side effects and cancer cure rates.
- d) Understand the indications for adjuvant therapy
- e) Understand the role of systemic treatments (chemo-, immuno-, targeted therapy, etc) in the management of patients with advanced, persistent or recurrent disease.
- f) Be updated in the treatment options for advanced or recurrent disease.
- g) Be familiar with the complications derived from disease progression.
- h) Know different fertility preservation options.
- i) Appreciate the relevance of a multidisciplinary approach.

IV Vulvar and vaginal cancer

- a) Be updated in the epidemiology, etiology and risk factors associated.
- b) Know staging procedures, including indications and limitations of imaging radiological tools for a complete diagnosis.
- c) Understand the role of primary surgery in treatment of early-stage vulvar/vaginal cancer and the indication of chemo-radiation for unresectable disease.
- d) Understand the indications for adjuvant therapy
- e) Understand the role of systemic treatments in the management of patients with advanced, persistent or recurrent disease.
- f) Be familiar with the complications derived from disease progression.
- g) Appreciate the relevance of a multidisciplinary approach.

V Gestational trophoblastic neoplasia

- a) Be familiar with different histological types and molecular pathogenesis.
- b) Know the staging systems including International Federation of Gynecology and Obstetrics (FIGO), anatomical staging for gestational trophoblastic neoplasia (GTN) and modified WHO prognostic scoring system.
- c) Be familiar with diagnostic procedures and their limitations.
- d) Understand the role of primary surgery in the management of complete and partial molar pregnancies.
- e) Understand the management of GTN by FIGO stage
- f) Be updated in the role of chemotherapy in the treatment of persistent or recurrent disease.
- g) Understand the surveillance following treatment, and the relevance of preventing subsequent pregnancy.
- h) Appreciate the relevance of a multidisciplinary approach.

1.2.3.3.6 Genitourinary cancer

I Prostate cancer

- i) Understand the epidemiology and controversies surrounding the screening of prostate cancer.
- j) Know the indications and limitations of the available diagnostic tools.

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- k) Understand the importance of histological grading and dominant Gleason classification.
- l) Be updated in new techniques to treat patients with localised disease, and know the different options available for early-stage patients: active surveillance, surgery, radiotherapy. Be able to explain patient advantages and disadvantages of different options.
- m) Be updated in systemic treatments (hormonal, chemo-, immuno-, targeted therapy, radioisotopes, etc) in hormone-sensitive prostate cancer metastatic patients.
- n) Understand the definition of castration resistant prostate cancer and be updated in novel therapies based on AR-target and bone-targeting agents. Know the indication of chemotherapy in this setting.
- o) Be aware of side effects associated with androgen deprivation therapy and combination with treatments indicated in CRPC.
- p) Be updated in biology of prostate cancer, and emerging active agents to treat DNA repair defects.
- q) Understand the indication of bone-targeted therapies and the prevention and treatment of jaw osteonecrosis, in particular the importance of pre-treatment dental health including extraction of teeth of poor prognosis.
- r) Appreciate the importance of multimodality approach.

a supprimé: Understand the indication of bone-targeted therapies and the prevention and treatment of jaw osteonecrosis

II Renal cell cancer

- a) Be familiar with the epidemiology, etiology and risk factors associated to the disease
- b) Understand that renal cell carcinoma is a metabolic disease with different histological categories and different genetic patterns associated.
- c) Know the TNM classification and newer staging systems for assessing risk in metastatic renal cancer patients.
- d) Be updated in the different types of local therapy in use, including enucleation, partial nephrectomy, cryotherapy and hyperthermia, and laparoscopic surgery to treat localized disease.
- e) Understand the indication and techniques available for radical nephrectomy.
- f) Understand metastasectomy for oligometastatic disease and discuss the indication in multidisciplinary team meetings.
- g) Be updated in the indication of first- and second-line systemic therapies for patients with metastatic disease including chemo-, immuno-, targeted therapy, etc).
- h) Know therapies indicated in patients with non-clear renal cell carcinoma.
- i) Be updated with results available from the adjuvant studies with targeted therapies.
- j) Be familiar with hereditary cancer syndromes, the management of these families and the implications for individual patients.

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III Urothelial cancer

- a) Be familiar with the epidemiology, etiology and risk factors associated to the disease
- b) Know most common presenting symptoms
- c) Be updated in pathological diagnosis and diagnosis of precursor lesions as carcinoma in situ.
- d) Be able to distinguish non-muscle invasive (NMIBC) and muscle invasive (MIBC) bladder cancer and know the different implications for progression, recurrence, spread, prognosis and treatment.
- e) Know the indication of urine cytology, diagnostic imaging and cystoscopy in the staging and follow-up of patients.

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- f) Understand the role of intravesical therapy in the management of NMIBC, and the indication of salvage instillation and surgery in recurrent, progressive NMIBC an early-stages MIBC.
- g) Know the indication for radical cystectomy and lymph node dissection, radical chemo-radiotherapy and trimodality treatment for MIBC.
- h) Be able to distinguish clinical prognostic groups
- i) Establish eligibility for standard chemotherapy with cisplatin and know alternative treatment options cisplatin ineligible patients (systemic treatments including chemo-, immuno-, targeted therapy, etc)
- j) Appreciate the importance of multimodality approach.

IV Penile cancer

- a) Understand risk factors associated to penile cancer development, like the role of HPV infection and the ethnic background.
- b) Understand the relevance of staging for prognosis and treatment and know different approaches for diagnosis.
- c) Know the potential curative role of surgery and radiation treatment and the possibility of penile-preserving techniques.
- d) Know the value of early detection of lymph node metastasis and the indication of sentinel node biopsy and lymphadenectomy.
- e) Understand the different options of chemotherapy for metastatic disease.
- f) Appreciate the importance of multimodality approach.

V Germ cell tumors

- a) Be familiar with the epidemiology, etiology and risk factors associated to the disease
- b) Understand the epidemiology and incidence of germinal tumors at young age.
- c) Be able to recognize precancerous lesions.
- d) Understand the differences between histologies: seminoma and non-seminomatous germinal cell cancer, and the rare occurrence of extragonadal tumors.
- e) Know staging tools and diagnostic imaging and tumour markers, useful also for treatment monitoring and follow-up.
- f) Understand that surgery of the primary tumor is standard of care and curative in many stage I patients. Know the indication of adjuvant chemotherapy and surveillance.
- g) Know the indication for contralateral testis biopsy.
- h) Dominate the International Germ Cell Cancer Collaborative Group (IGCCG) classification for metastatic germ cell tumors and its prognostic value.
- i) Know the indication of cisplatin-based chemotherapy with curative intention for advanced disease.
- j) Know the indication for residual tumor surgery after chemotherapy and its curative role.
- k) Know the indication of conventional-dose and high-dose (with peripheral stem cells support) chemotherapy regimens in the salvage setting.
- l) Dominate the most common early and late toxicities.
- m) Appreciate the importance of multimodality approach.

1.2.3.3.7 Sarcomas

I Bone sarcomas

- a) Understand the importance of a multi modality approach in curable sarcomas

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- b) Be able to manage the first diagnosis of a bone sarcoma and refer patients for specialized multidisciplinary treatment in reference centers.

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- c) Know epidemiology and natural history of bone sarcomas.
- d) Know different histological entities, appreciating the importance of pathological diagnosis.
- e) Understand the principles for surgery in bone sarcomas.
- f) Understand the indication of systemic therapy.
- g) Consider main survivorship issues for children and young patients cured after treatment.
- h) Appreciate the relevance of multimodality approach.
- i) Be familiar with hereditary cancer syndromes, the management of these families and the implications for individual patients.

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II Soft tissue sarcomas

- a) Understand the importance of a multimodality approach in curable sarcomas
- b) Be able to manage the first diagnosis of soft tissue sarcomas and refer patients for specialized multidisciplinary treatment in reference centers.
- c) Know epidemiology and natural history of soft tissue sarcomas.
- d) Know different histological entities, appreciating the importance of pathological diagnosis and prognostic factors.
- e) Understand the indication of surgery and radiation therapy for localized disease.
- f) Be updated in the evidence of neoadjuvant and adjuvant systemic therapy.
- g) Know the role of surgery of lung metastases.
- h) Understand the role of systemic therapy in advanced disease.
- i) Appreciate the relevance of multimodality approach.
- j) Be familiar with hereditary cancer syndromes, the management of these families and the implications for individual patients.

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III Gastrointestinal stromal tumour (GIST)

- a) Be able to manage the first diagnosis of GIST tumors and refer patients for specialized multidisciplinary treatment in reference centers.
- b) Know epidemiology and natural history
- c) Know the importance of genotyping and the existence of prognostic classifications, including the role of mutations in c-KIT and PDGFRA genes.
- d) Understand the indication of surgery for localized disease.
- e) Be familiar with the indications for adjuvant molecular targeted therapy.
- f) Be familiar with the rationale and indications of systemic therapy and the different options of molecular targeted agents.
- g) Appreciate the relevance of multimodality approach.
- h) Be familiar with hereditary cancer syndromes, the management of these families and the implications for individual patients.

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1.2.3.3.8 Skin cancer

I Melanoma

- a) Be familiar with the epidemiology, etiology and risk factors associated to the disease
- b) Be able to identify patients at high risk for melanoma and melanoma familial syndromes and to perform adequate counselling for these patients and their families.
- c) Understand the molecular, cellular and immunological pathology of melanoma, and

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its implications for cancer management.

- d) Be familiar with different anatomic sites and associated behaviors, which influence therapeutic strategies.
- e) Know the indications of different techniques for diagnosis
- f) Be updated in the different molecular profiles of melanoma to select therapy
- g) Understand the role of adjuvant therapies in high-risk melanoma.
- h) Be familiar with the indications for therapy in advanced disease, including targeted therapy, immunotherapy, chemotherapy, surgery and radiation therapy.

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- i) Be able to manage toxicity associated.
- j) Be familiar with melanoma-associated paraneoplastic syndromes.

II Basal cell and squamous cell cancers

- a) Be familiar with the epidemiology, etiology and risk factors associated to the disease
- b) Understand the causes and natural history of these tumors.
- c) Be able to identify hereditary syndromes (Gorlin-Goltz)
- d) Know the existence of different biological and pathological subtypes and adequate treatment strategies.
- e) Be familiar with risk prognostic factors, including TNM staging system.
- f) Understand the indication of surgery, cryotherapy, chemotherapy, photodynamic therapy, radiotherapy, laser therapy, targeted therapies, and their limitations.
- g) Understand the role of targeted agents and immunotherapy in the management of patients with advanced disease.
- h) Appreciate the relevance of secondary prevention in these patients.

1.2.3.3.9 Endocrine cancer

I Thyroid cancer

- a) Be familiar with the epidemiology, etiology and risk factors associated to the disease
- b) Understand the existence of different biological and pathological subtypes.
- c) Know the epidemiology, environmental and genetic factors involved in thyroid cancer pathogenesis.
- d) Know different prognostic classifications used to select the appropriate therapy strategy.
- e) Be familiar with diagnostic procedures including neck ultrasonography and fine needle aspiration.
- f) Understand the indications for surgery, radioactive iodine ablation and external beam radiotherapy in the management of localized disease.
- g) Understand the indications for radioiodine treatment, local treatment options and systemic treatments (chemo-, immune-, targeted therapy, etc) in the management of locally advanced and metastatic thyroid cancer.
- h) Appreciate the relevance of multimodality approach.

II Neuroendocrine tumors

- a) Understand the existence of different biological and pathological subtypes.
- b) Be familiar with inherited forms of neuroendocrine tumors (MEN1, MEN2, VHL, tuberous sclerosis).
- c) Know prognostic factors, including grading and staging systems.
- d) Be familiar with diagnostic tools.
- e) Understand the indication and value for surgery, radiation therapy, chemotherapy, hormonal, biological and targeted therapies.
- f) Be familiar with the role of somatostatin analogues for antitumor and symptomatic control.
- g) Understand the indication for chemotherapy, targeted therapy and radio isotopes (PPRT) in the treatment of locally advanced and metastatic tumors.
- h) Understand the role of peptide receptor radiotherapy (PRRT) in the multidisciplinary approach of neuroendocrine cancer.

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- i) Be familiar with side effects and hormone-related emergencies during treatment.

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1.2.3.3.10 Central Nervous System cancer

- a) Understand the implications of different pathological and molecular subtypes of gliomas to select the appropriate treatment strategy.
- b) Be updated in the different diagnosis modalities for primary and metastatic brain tumors.
- c) Understand the indication of surgery, radiation therapy, chemotherapy and antiangiogenics for patients with newly diagnosed and recurrent gliomas.
- d) Know the management of tumors metastatic to brain and central nervous system.
- e) Understand phenomena of pseudo-progression and pseudo-regression.
- f) Be familiar with potential complications of therapeutics interventions
- g) Dominate the management of increased intracranial pressure, seizures, fatigue and cognitive impairment.
- h) Appreciate the relevance of multimodality approach.

1.2.3.3.11 Unknown Primary cancer

- a) Be updated in diagnostic methods to identify the primary sites, including pathology, imaging and endoscopies.
- b) Know how to interpret immunohistochemistry.
- c) Know the indication of serum epithelial tumor markers and their limitations.
- d) Be familiar with staging and prognostic factors.
- e) Understand that favorable unknown primary cancer should be treated with curative intent and unfavorable subsets with palliative intent.
- f) Be updated in definitive data from ongoing phase III trials justifying the use of gene profiling
- g) Understand the limited evidence about the use of targeted treatments in unknown primary cancer.
- h) Appreciate the importance of contribute in multidisciplinary teams.

1.2.3.3.12 Hematologic neoplasms

I Leukemias

- a) Be familiar with the epidemiology, etiology and risk factors associated to the disease
- b) Be familiar with the indications and techniques of different diagnostic tools available including peripheral blood morphology examination, bone marrow aspirates and biopsies, immunophenotyping, cytogenetics, karyotyping and molecular diagnostic procedures.
- c) Be familiar with the techniques to identify potential HLA-compatible stem cell or bone marrow donors.
- d) Be familiar with the identification and treatment of comorbidities.
- e) Know the risk factors for specific types of leukemias.
- f) Understand the indication for chemotherapy, targeted therapy and stem cell transplantation, their side effects and therapeutic results.
- g) Understand the principles of transfusion medicine, red and platelet support and leukapheresis.
- h) Be updated in the diagnosis and treatment of infectious, especially relevant in periods of severe treatment-induced bone marrow failure.
- i) Know the disease-associated syndromes such as autoimmune cytopenia.
- j) Be familiar with the complications derived from disease progression
- n) Be familiar with supportive and palliative care strategies.

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II Hodgkin's Lymphomas

- a) Be familiar with the epidemiology, etiology and risk factors associated to the disease
- b) Be familiar with the characteristics of the different pathological subtypes.
- c) Be updated in the indications of the different diagnostic approaches available, including excisional biopsy versus core needle biopsy.
- d) Know the staging system and the role of prognostic factors to guide treatment selection.
- e) Understand the role of PET imaging in the staging and their limitations.
- f) Understand the indication and the value for radiation therapy, systemic treatments (chemo-, immune-, targeted therapy, etc), and supportive and palliative care.
- g) Understand the role of high-dose chemotherapy and/or bone marrow transplantation in relapsed and refractory Hodgkin's lymphomas.
- h) Be familiar with the role of monoclonal antibody therapy in the relapse/refractory setting.
- i) Appreciate the relevance of multimodality approach.

III Non-Hodgkin's Lymphomas

- a) Be familiar with the epidemiology, etiology and risk factors associated to the disease
- b) Be familiar with the characteristics of the different pathological subtypes.
- c) Know the diagnostic criteria of the EORTC/WHO classification
- d) Be familiar with the indications of the different diagnostic approaches available, understanding that biopsy is mandatory and fine needle aspiration is not enough for making diagnosis.
- e) Be familiar with immunohistochemistry, FISH analysis and genetic abnormalities.
- f) Know the Ann Arbor Staging System, the International Prognostic Index and the staging system for mycosis fungoides/Sezary syndrome.
- g) Understand the role of prognostic scores in non-Hodgkin's lymphomas and be familiar with prognostic parameters (MYC, BCL-2 rearrangements.)
- h) Understand the role of PET imaging in the staging and their limitations.
- i) Understand the indication and the value for chemotherapy, chemo-immunotherapy, monoclonal antibodies, adoptive immunotherapy (incl. CAR-T) targeted therapy, radiation and supportive/palliative care.
- j) Understand the role of high-dose chemotherapy, adoptive immunotherapy, use of immune conjugates and/or bone marrow transplantation in relapsed and refractory non-Hodgkin's lymphomas.
- k) Appreciate the relevance of multimodality approach.

IV Plasma cell dyscrasias

- a) Be familiar with the epidemiology, etiology and risk factors associated to the disease
- b) Know the existence of different types of plasma cell dyscrasia and the selection of the most appropriate treatment.
- c) Be familiar with the diagnostic tools available.
- d) Be familiar with the risk assessment based on prognostic factors.
- e) Understand the indication and the value of radiation therapy, chemotherapy, autologous and allogeneic transplantation, monoclonal antibodies, targeted drugs, immunotherapies including adoptive immunotherapies and supportive/palliative care.
- f) Know the evidence and strengths of treatment personalization opportunities.

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g) Understand the complications derived from disease progression and treatment-associated toxicities.

V Myeloproliferative disorders

a) Be familiar with the epidemiology, etiology and risk factors associated to the disease

b) Understand implications of different subtypes.

c) Be familiar with diagnostic criteria for main subtypes and diagnostic algorithms.

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- d) Be familiar with the risk assessment of prognostic factors.
- e) Understand possible progression scenarios like leukemic transformation and secondary fibrosis.
- f) Understand the indication of different treatment options: symptomatic treatment, including targeted treatment approaches, and allogeneic transplant.
- g) Understand the role and value of cytoreductive therapies, splenic irradiation, splenectomy.
- h) Know the evidence and strengths of treatment personalization opportunities.
- i) Understand the complications derived from disease progression and treatment-associated toxicities.

1.2.3.4 *Clinical Research.*

A medical oncologist must be able to translate a scientific proof of concept into an adequately designed clinical trial.

1.2.3.4.1 Clinical trials

- a) Acquire the knowledge of different types of clinical trials to lead the most appropriate choice of clinical trial to answer a clinical question
- b) Be updated in the incorporation of biomarkers to clinical studies.
- c) Be familiar with statistical designs and methodologies, and select the best endpoint for each study
- d) Appreciate the scientific background of preclinical research and its limitations.
- e) Be awareness of the legal, ethical and regulatory aspects of clinical trials
- f) Know the criteria for tumor response evaluation, assessment of quality of live and their limitations.
- g) Be able of report toxicity using CTCAE criteria and attribute toxicity to the study interventions.
- h) Be precise collecting and interpreting clinical data
- i) Understand the responsibilities of the steering and monitoring committees
- j) Be able to write a grant, and present study reports,
- k) Receive training in informed consent process

1.2.3.4.2 Translational research

- a) Be trained in biological sample collection, which is a critical step for translational studies, including the identification of the type of sample, the process for gaining consent from the patient to collect specimens, the storage of samples and how to retrieve samples from biobanks.
- b) Understand the relevance of biomarker studies, which connect clinical outcomes with a biological variable and increase the knowledge of cancer and the drugs involved in its treatment.
- c) Acquire basis knowledge about laboratory techniques (PCR, western blot, cell culture and histology)
- d) Be updated in scientific public databases and be able to perform data analysis, when to look help for statistics.
- e) Know the need of validation for exploratory findings in clinical trials.

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1.3 Practical and clinical skills

Key skills to possess in this specialty

Trainees prior to appointment as a specialist/consultant should have mastered the following practical procedures:

- To diagnose, stage and treat cancer patients in a multidisciplinary way.
Competency level: Independently.
- To follow the entire clinical evolution of the cancer patient and to write appropriate orders for administration of antineoplastic agents, including relevant supportive care drugs and dose modifications based on current laboratory parameters and prior toxicities. *Competency level: Independently.*
- To handle chemotherapeutic and non-chemotherapeutic anticancer agents.
Competency level: Independently.
- To manage the toxicities of antineoplastic agents and the symptoms caused by cancer. *Competency level: Independently.*
- To manage palliative care patients, including end-of-life situations.
Competency level: Independently.
- To follow-up cancer survivors, in order to maximize their quality of life and minimize late toxicities. *Competency level: Independently.*
- To recognize oncologic emergencies and to treat patients accordingly, in a timely manner. *Competency level: Independently.*
- To perform supervised bone marrow aspiration and biopsies that includes obtaining appropriate consent, performing the procedure with minimal patient discomfort and basic interpretation of the results. *Competency level: Independently.*
- To perform supervised intrathecal administrations of chemotherapy by lumbar puncture and/or Ommaya reservoir. *Competency level: Independently.*
- To discuss the indications, contraindications and efficacy of intraperitoneal chemotherapy. *Competency level: Independently.*
- To assess the response to therapy using standard RECIST or other appropriate criteria, including which imaging modalities are most appropriate for initial assessment of disease status, as well as subsequent assessments.
Competency level: Independently.
- To interpret clinical trials data and reports. *Competency level: Independently.*
- To interpret biomarkers' assessments and tumor genetic data. *Competency level: Independently.*
- To participate in a multidisciplinary committee in cancer by presenting the clinical needs of an oncology patient and being able to assess the contributions of different specialists: *Competency level: Independently.*
- To inform patients on lifestyle modifications. *Competency level: Independently.*
- To communicate properly with patients and relatives, including the delivery of bad news. *Competency level: Independently.*

Number of procedures required

During his/her training, the trainee should observe cancer patients of varying organs, taking special attention to the diagnosis, prognosis, treatment and follow-up. Including but not limited to:

- a) Breast cancer
- b) Gastrointestinal cancer
- c) Lung cancer, mesothelioma and other thoracic tumors

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- d) Genitourinary cancer (kidney, urothelial, prostate, urethra, penis and testicle)
- e) Gynecologic cancer (vagina, vulva, cervical, endometrial, ovarian, gestational trophoblastic disease)
- f) Central nervous system
- g) Sarcomas and GIST
- h) Head and neck cancer
- i) Skin cancer and melanoma
- j) Endocrine tumors
- k) Cancer of unknown primary
- l) Hematologic malignancies
- m) Adolescent and Young Adult malignancies

1.4 Competences

Description of levels of competencies

The European Specialist Curriculum must cover not only knowledge and skills, but also domains of professionalism, as detailed by the UEMS Section.

To be appointed as a specialist/consultant an individual should show a level of competence sufficient to allow independent clinical practice and be able to care for cancer patients both in acute and chronic situations. Such a level of performance may vary from country to country and from post to post but the above lists and competencies describe the basic requirements one would expect of a 'European Medical Oncologist'.

A European specialist/consultant in Medical Oncology should be well informed in research principles: principles and methods of epidemiological research, principles of clinical research, evidence-based medicine, data analysis and medical informatics, laboratory techniques, ethics of clinical and basic research, critical review.

A 'European Medical Oncologist' would be expected to demonstrate ethical behavior, in keeping with the requirements of their country's medical registry/statutory body, and provide evidence to this effect. A 'European Medical Oncologist' would be in good standing with their relevant National Registration Body.

2 ORGANISATION OF TRAINING

A trainee is a doctor who has completed their general professional training as a physician and is in an accredited training program to become a recognized medical specialist. The trainee in medical oncology must be recognized as a trainee according to the regulations in force for each EU/EEA member state. This stage is variably known in different countries as an intern, assistant physician, fellow or registrar

The duration and curriculum of training in Medical Oncology should enable the trainee to become a fully independent specialist. A total training minimum time of **5 years of clinical activities** is required in Medical Oncology

2.1 Schedule of Training

Each trainee should receive a curriculum detailing minimum timelines and mandatory contents of his training program.

A total training minimum time of 5 years of **clinical activities** is required in Medical Oncology (total of 5 years including medical training in countries where the Medical

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Oncology is regarded as a subspecialty of Internal Medicine). In case of a longer medical training than 5 years, with Medical Oncology being a subspecialty of Internal Medicine: Training should start with 3-4 years in Internal Medicine; followed by 2-3 years in Medical Oncology. Clinical activities are defined as patient care and education. Included are primary care of cancer and supervision of patients with cancer in general medicine wards, specifically designated oncologic inpatient units, outpatient units, consultations, regular oncology rounds, regular multi-disciplinary tumor boards (with active participation) scheduled clinical conferences, diagnostic or therapeutic procedures on patients, review of imaging, pathology, genetic and other procedures, other direct patient care, attendance of national and international conferences, as well as reading of relevant literature.

Participation in journal clubs as well as research projects should be encouraged. Training activities should be full-time, as defined by the responsible accreditation board, comprising the majority of trainees' professional time and effort in a standard working week (according to the limit set by the European Working Time Directive EWTD)

Up to 6 months of training in Oncologic Surgery, Pathology, Diagnostic and Interventional Radiology and Radiotherapy may be included in the overall curriculum. Radiotherapy and Oncologic Surgery should be specifically encouraged. Up to 6 months of research may be validated as clinical activity. More research training and activity including international experience should be encouraged and will mostly be mandatory for academic careers, but cannot be validated within the 5 years curriculum. Trainees should be encouraged to carry out at least one research project under expert supervision. They should also be encouraged to train in more than one national or international institution, provided it is accredited by the competent local or national Board of Medical Oncology.

During the Medical Oncology program, the trainee should be exposed to a maximum spectrum of oncologic diseases, starting with screening (wherever appropriate), diagnosis and therapeutic management. The trainee should also have access to a wide variety of general and specialty consultative support including general surgery / surgical subspecialties, diagnostic and interventional radiology, laboratory medicine, pathology, neurology, physiotherapy, nutritional medicine, psycho-oncology, internal medicine with its subspecialties, etc.

In general, the trainees should be highly encouraged to spend training outside of the 2-3 years core training in medical oncology in the disciplines of radiation oncology and oncologic surgery so as to further enhance mutual understanding (as also proposed in the EU's current INTERACT-EUROPE project).

2.2 Curriculum of Training

Concerning detailed contents of the Curriculum of training, UEMS fully endorses the latest edition of the ESMO/ASCO Recommendations for a Global Curriculum in Medical Oncology (ed. 2016 ESMO Open 2016;1 e000097.doi:10.1136/esmpopen-2016-00097).

General and special competences are subdivided into "awareness", "knowledge" and "skills".

2.3 Assessment and Evaluation

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Assessment: Process by which information is obtained relative to some known objective or goal. (a broad term that includes testing)

Evaluation: Inherent in the idea of evaluation is "value." Process designed to provide information that will help us make a judgment about a given situation

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Even though Assessment and Evaluation can be obtained through various methods, homogeneity and comparability should be ensured by all institutions, as to ensure that trainees can take full advantage of cross border training and mobility.

Assessment is a continuous process during the trainees' entire formation. Five main competencies have to be assessed:

- Provide patient-centered care
- Ability to work in interdisciplinary teams
- Employ evidence-based practice
- Apply quality improvement
- Utilize information and other technologies

The purpose of the assessment system is to:

- enhance learning by providing formative assessment, enabling trainees to receive immediate feedback, measure their own performance and identify areas for development
- drive learning and enhance the training process by making it clear what is required of trainees and motivating them to ensure they receive suitable training and experience
- provide robust, summative evidence that trainees are meeting the curriculum standards during the training program
- ensure trainees are acquiring competencies
- assess trainees' actual performance in the workplace
- ensure that trainees possess the essential underlying knowledge required for Medical Oncology
- identify any requirements for targeted or additional training where necessary and facilitating decisions regarding progression through the training program

The assessments should be supported by structured feedback for trainees within the training program of Medical Oncology. Assessment tools will be both formative and summative. Workplace-based assessments should take place throughout the training program to allow trainees to continually gather evidence of learning and to provide trainees with formative feedback. The number and range of these will ensure a reliable assessment of the training relevant to their stage of training and achieve coverage of the curriculum.

Testing

Regular testing takes place in order to evaluate whether the resident in training satisfies the required knowledge, competencies and skills. The resident in training is tested throughout the duration of the training.

The resident in training is tested by the local trainers on a regular basis

Possible tools for evaluation are feedback at the work place, 360-degree feedback, workplace assessment, active participation in Tumor Board discussion and tests through validated e-Tools (clinical cases, guideline related tests, etc.)

Each trainee should keep a portfolio/logbook documenting his/her training experience. Certain techniques (i.e., invasive procedures, etc.) should also be documented in numbers performed.

The trainer should provide a final statement of the level of competencies achieved, in a standardized way so as to facilitate comparability with other institutions /countries

Example:

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Level 1 – has experience of selecting the procedure appropriately and interpreting the results but not necessarily experience of performing the procedure. However, participation in the procedure under direct supervision during training will be valuable.
Level 2 – is able to go beyond level 1 and perform the procedure with limited supervision/assistance in routine uncomplicated cases.
Level 3 – independently is able to recognize the indication for, perform and interpret the results of the procedure and manage any complications arising

Based on the ESMO/ASCO core curriculum, the educating institution should either on institute level, better on national level provide a logbook to document the items the trainee has accomplished according to the curriculum.

The ESMO exam is generally well accepted as a valid test of knowledge in Medical Oncology. It has been recognized by some European member states as mandatory to obtain recognition as a Medical Oncologist. Trainees should be encouraged to pass the exam as part of their successful training in the domain.

By analogy to the European law guaranteeing reciprocity in accepting professional diplomas in all member states, it is suggested that training periods undertaken by trainees according to the European core curriculum in an accredited training program in any member state should be accepted as equivalent to the same period of training in their own state.

The principle of Competency Based Medical Education (CBME) primarily in connection with the introduction of the Entrustable Professional Activities (EPA) assessment system is advised when and where possible.

2.4 Governance

Each National Authority should work with the national society for Medical Oncology and professional union to provide quality assurance of training in Oncology. Trainees should have the opportunity to be partly trained in recognized training institutions both in other member states of the EU as well as outside the EU. These training periods and training institutions have to be approved by the National Authority.

The National Authority should determine each country's process for the selection and appointment of trainees in Oncology. The National Authority should implement regulation of access to training in Oncology in accordance with national manpower planning projections in the EC member state. There should be close involvement of trainers, training institutions and any other responsible bodies to select and appoint trainees who are suitable for Oncology in accordance with the established selection procedure. This selection procedure should be transparent, and application should be open to all persons who have completed basic medical training.

The ESMO examination could become a standard European exam as a standardized written exam to obtain together with the curriculum and national approval conditions the title of a European Medical Oncologist.

Trainees will be supported at a number of levels. A trainee's clinical work will be supervised by a trainer. (Such an individual already exists in all countries and is known by a variety of titles.) The trainer will be responsible for providing the trainee with regular feedback as regards their performance and guidance in matters related to the clinical care that they are delivering. In addition, all training programs in oncology will be led in an institution (or in a group or network of allied institutions) by a Program Director. A trainee will meet with their Program Director on a regular basis, which

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typically would be every six months, to discuss their work. Such

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discussions will take the format of an appraisal with the trainee providing information about how they are progressing, accompanied by documented evidence of clinical engagement and achievement of their learning and training outcomes. The purpose of the appraisal is to enable a constructive discussion about how the learning needs of the trainee should be met. Subsequent appraisals will revisit earlier appraisals to determine progress in achieving these needs. The appraisals are not part of any summative assessment process but are designed entirely to support the trainees. Assessment of skills in practical procedures will be in the training establishment. Such assessments may include, where appropriate, the use of simulation prior to an assessment in clinical practice. It is recommended that a portfolio is made for each trainee with the evaluations and appraisals that are carried out during the learning process.

Professional behaviors would be part of the assessment strategy too and typically a 360-degree multi-source feedback (MSF) would occur at the end of the first or second year of training and at the start of the final year of training. Such assessments may occur more frequently in some countries. The Program Director would be central to the discussion and reflection undertaken after each MSF and provide guidance and support in response to comments made by those providing the MSF to a trainee. Additional MSFs would occur if the initial MSF demonstrated a less than adequate performance by the trainee. Local national standards as regards an individual's suitability for clinical practice would determine whether or not a trainee was employable as a consultant/specialist

3 TRAINING REQUIREMENTS FOR TRAINERS

3.1 Process for recognition as trainer

a. Required qualification and experience

The program director must be a highly qualified medical oncologist with considerable experience in trainee education and in organizational activities. He should appoint several medical oncologists to be responsible for teaching and training. A trainer would be a registered medical practitioner and registered too as a medical oncology specialist within his or her own country. They will have satisfied any relevant national requirements as regards accreditation/appraisal/training to be a trainer.

Training of trainers is according to national regulations and otherwise covered by the EU Directive on Professional Qualifications.

b. Core competencies for trainers:

A trainer will be:

1. Familiar with all aspects of the overall medical oncology curriculum as it relates to practice within their country
2. Experienced in teaching and in supporting learners
3. Skilled in identifying the learning needs of their trainees and in guiding the trainees to achieve their educational and clinical goals
4. Able to recognize trainees whose professional behaviors are unsatisfactory and initiate supportive measures as needed
5. Trained in the principles and practice of medical education

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3.2 Quality management for trainers

It is the responsibility of program director to ensure a high quality of the trainers. If the minimum requirements for trainers cannot be met by a single institution, several training institutions should combine and offer an integrated program that meets these minimal requirements. This should be done according to national guidelines and legislation.

It is hoped that trainers and program directors will have their job description agreed with their employer which will allow them sufficient time each week for support of trainees and in the case of program directors, sufficient time for their work with trainers. The ratio between the number of trainers and the number of trainees should allow close personal supervision of the trainee during his/her training.

Trainers will collaborate with trainees, the program director and their Institution to ensure that the delivery of training is optimal. Feedback from trainees will assist in this regard.

The educational work of trainers and program directors will be appraised typically on no less than an annual basis within their Department/Institution as local circumstances determines.

Educational support of trainers and program directors will be provided by their Department and Institution, their National Medical Association and through the Section of Medical Oncology of UEMS.

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4 TRAINING REQUIREMENTS FOR TRAINING INSTITUTIONS

4.1 Process for recognition as training center

The general requirements for recognition as a Training center in Medical Oncology are that:

- it is an institution, or group of institutions, which offer the trainee practice across the full range of the specialty including involvement with allied specialties to provide the trainee in Medical Oncology the opportunity to develop his/her skills in a team approach to patient care
- it has all the necessary infrastructure to provide the training in Medical Oncology as defined in the curriculum
It should provide or have access to a defined affiliated Pathological Anatomy Unit , accredited for the realization of molecular pathology.

- it provides the trainee with space and opportunities for practical and theoretical study and access to adequate national and international professional literature
- it has a structured training program, which includes theoretical teaching sessions, training duties for each trainer and adequate numbers of practical procedures per trainee
- it undergoes monitoring in a structured way by the national authorities including visits and appraisal of their standards as training centers, at least every five years
- it has an internal system of medical audit or quality assurance including features such as mortality conferences, reporting of accidents in accordance with a structured procedure
- it has a chief of training recognized by the relevant national authorities who should have been practicing the specialty for at least 5 years after specialist accreditation and should have received specific training

The number of trainees per training center should be based upon the number of trainees that the center can train (the number of practical procedures per trainee is the minimum which has to be taken into account) and the manpower planning projection of each EU national state. The national authorities can put into effect additional criteria for training institutions if needed.

A 'good learning environment' includes encouragement for self-directed learning as well as recognizing the learning potential in all aspects of day-to-day work. A supportive open atmosphere should be cultivated and questions welcomed. The bulk of learning occurs as a result of clinical experience (experiential on-the-job learning) and self- directed study. Lectures and formal educational sessions make up only a

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small part of the postgraduate training in oncological medicine. Trainees should regularly update their personal portfolio to keep a personal record, and be able to present to others, the evidence of the learning methods used.

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Experiential Learning Opportunities: Every patient seen, on the ward or in out-patients, provides a learning opportunity, which will be enhanced by following the patient through the course of their illness. Patients seen should provide the basis for critical reading around clinical problems. Ward rounds should be led by a consultant and include feed-back on clinical and decision-making skills. Trainees should have the opportunity to assess both new and follow-up outpatients and discuss each case with the supervisor so as to allow feedback on diagnostic skills and gain the ability to plan investigations. There are many situations where clinical problems are discussed with clinicians in other disciplines, such as cardiac surgical multidisciplinary meetings. These provide excellent opportunities for observation of clinical reasoning.

Training in Practical Procedures: Undertaking supervised practical procedures in Medical Oncology with a consultant or more senior trainee, including the care and counselling of the patient/caregivers before and after the procedure, is the key method of gaining competence in these aspects of the curriculum (apprenticeship learning). Also, with advances in technology the use of simulators will play an increasing part in the training of practical procedures. As trainees gain experience, they will progress from observing to performing and from simple to more complex cases. Trainees should maintain a logbook of experience.

Small Group Learning Opportunities: case presentations and small group discussion, particularly of difficult cases, including presentations at clinical and academic meetings; critical incident analysis; small group bedside teaching, particularly covering problem areas identified by trainees; small group sessions of data interpretation, particularly covering problem areas identified by trainees; participation in audit meetings, journal clubs and research presentations.

Audit and Guidelines: trainees should be directly involved in and, after understanding the rationale and methodology, be expected to undertake a minimum of one in-depth audit every two-years of training. Trainees should be involved in guideline generation and review.

Personal Study: personal study including computer-based learning; practice examination questions and subsequent reading; reading journals; writing reviews and other teaching material.

Online Education: the development of the ESC e-learning platform (ESCeL) will provide trainees across Europe with an unrivalled educational resource. This curriculum-based tool will enable the trainee to undertake and document formative knowledge assessments mapped to the ESMO Core Curriculum for Medical Oncology syllabus.

4.1.1 Requirement on staff and clinical activities

A 'Training Centre' is a place or number of places where trainees are able to develop their Medical Oncology competences. Such provision may include sites which are condition specific and thus not offer a wide clinical experience such as that provided by a large center.

Thus, Medical Oncology training may take place in a single institution or in a network of institutions working together to provide training in the full spectrum of clinical conditions and skills detailed in the curriculum. This should include a hospital or institution that

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provides academic activity and is also recognized for training in internal medicine and surgery. Each participating institution in a network must be individually recognized as a provider of a defined section of the curriculum.

The training of a trainee will be led and managed by a specialist/consultant Medical Oncologist. This specialist will be active in the practice of Medical Oncology with personal responsibility for the management of patients with a wide range of oncological conditions. Within a training center there would be a number of specialist/consultant Medical Oncologists (trainers) who would be able to supervise and personally train a trainee. Whilst the trainer will not manage patients with all the diagnoses listed above, he/she will be able to ensure, by working with the Program Director and other local trainers that the clinical experience of the trainee will prepare them for clinical work as a specialist. The preparation for being a specialist in one country may be different from that needed if the trainee wishes to practice in another country as a specialist.

It is essential that as part of their training trainees will be responsible for caring for patients on both an emergency and routine basis. This may need the involvement of multiple training sites that offer different 'opening hours. The trainee should be involved in the management of new patients, follow up of patients and in-patients.

A trainee must have progressively increased personal responsibility for the care of patients with oncological conditions and retain their general medical skills so as to be able to identify patients who present to a Medical Oncology service but whose underlying clinical problems are not oncological.

The staff of a training center will engage collaboratively in regular reviews of the center's clinical activity and performance. There will be regular multi-disciplinary meetings to determine optimal care for patients and such meetings will involve both medical and other healthcare staff. There will be clinical engagement outside of the center with other clinical groups such as radiation oncology, general surgery, nuclear medicine, plastic surgery, physical and rehabilitation medicine, orthopedics, oral medicine in dental practice, immunology and dermatology.

Within a Medical Oncology training center there should be a wide range of clinical services available so that a trainee will be able to see and contribute to the care of all common oncological problems. In addition, the patient numbers and specialist numbers should be sufficient so that trainees will be able to be instructed and then supervised in the clinical procedures required of a specialist.

The balance between in-patient and out-patient numbers is constantly changing as Medical Oncology becomes more out-patient based than in the past. Thus, no specific in- or out- patient numbers are stated as being necessary to be seen by a trainee during their training.

Specialist staff appointed to a training center will have completed all training requirements themselves and will have been trained also in teaching and mentoring trainee staff. Specialists already in post will undertake training, if they have not already completed this, to enable them to support trainees optimally. Such training and maintenance of skills and knowledge in this area will be part of their job-plan and subject to appraisal (see above).

It would be unacceptable for a trainee to have only one trainer during their entire

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training period. It would be more usual for a trainee to have a number of named trainers with whom they work on a day-to-day basis. Each trainer would cover different aspects of a trainee's clinical training but this individual will not be the only person who will provide educational support for a trainee. (See above for comments about the Program Director and his/her role). In addition to medical staff supporting a trainee's development it is likely that non- medical members of staff will also be engaged. It would be expected that the specialists in a training center(s) represent a wide range of oncological expertise and that such individuals demonstrate that they remain up to date with their clinical practice, knowledge and educational skills.

There is no specific trainee/trainer ratio that is required but it would be unusual for there to be less than three specialists in a training center or clinical network and for a trainer to have more than four trainees attached to them at any one time. If a trainee moves between a number of centers for their training it is recommended that whenever possible although their trainers may change, their Program Director should remain the same. Program Directors may also be trainers.

It is not a requirement that a training center is also an academic center for Medical Oncology but it is desirable that a training center would have strong academic links and contribute to research and an [aspiration that](#) all training centers will become so involved in the future.

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It would be expected that a training center as described in this document will have been recognized/accredited by the relevant national authority as being suitable for training specialists/consultants in Medical Oncology. Confirmation of such status of training centers will be by National Representatives to the Section and Board.

When a Medical Oncology department/center wishes to be recognized as a training center they will submit a report to the UEMS Section and Board of Medical Oncology through their National Representative(s). This will demonstrate that all the necessary educational and training provisions are available in a sustained manner. Subsequently, on a biennial basis a training center will provide a brief report on its activities, to the Section and Board, again through their National Representative(s). This will demonstrate the maintenance of the education and training provision and allow examples of good practice to be disseminated. The existence of a series of temporary evaluations of the quality of the teaching in schools is advisable in order to maintain an adequate level of excellence.

There should be appropriate quality assurance systems in place that involve regular objective assessment of the quality of medical care as well as evaluation of the program and outcomes of training.

4.1.2 Requirement on equipment, accommodation

A training center would have sufficient equipment and support to enable the clinical practice that would be expected of a training center and thus provide the necessary educational opportunities for trainees.

Trainees would have suitable accommodation for their work and if required to be resident suitable accommodation for this too.

Computing and Information Technology and library resources must be available. All trainees must engage in clinical audit and have the opportunity to engage in research.

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4.2 Quality Management within Training institutions Accreditation

Training centers would be recognized within their own country as being suitable for being such and for being suitable for the care of patients with a wide range of oncological conditions. It would be expected that training centers would be subject to regular review within their country and this would include data relating to the progress of trainees and their acquisition of specialist accreditation.

4.2.1 Clinical Governance

Training centers will, almost certainly, undertake internal audits of their performance as part of the requirements for continuing national recognition/accreditation. It is anticipated that any national evaluation of a training center's performance will also include the demonstration that it is:

1. Providing care for patients with a wide range of oncological conditions
2. Providing educational and training support for trainees and others
3. Part of a healthcare system that provides immediate access to relevant laboratory and other investigations as well as providing when necessary immediate access to other clinical specialties that may be required by their patients.

The outcomes of such national evaluations will be made available to the Section and Board by the National Representative(s).

Training centers should keep records of the progress of their trainees, including any matters relating to Fitness to Practice or other aspects that might affect a trainee's registration with the relevant national body. The Program Director has specific responsibilities in this regard (see above).

4.2.2 Transparency of training programs

It would be expected that a training center would publish details of the training provision available with details of the clinical service it provides and the specialist and other staff. Such information would include the training program, the nature of the clinical experiences with which a trainee would be engaged and the support and interaction with the trainer and Program Director. There would be a named individual whom a prospective trainee might contact and discuss the program.

4.2.3 Structure for coordination of training

There should be a national (or equivalent) program for training leading to recognition as a specialist within that country. The trainee's job plan should allow sufficient time for developmental activities separate from their involvement with clinical service provision. The job plans of trainers and of Program Directors should include sufficient time for them to [fulfil](#) their educational and training responsibilities.

Training centers will be recognized and approved by the relevant national authority. To assist a Medical Oncology specialist moving from one EU country to another it would be expected that they have satisfactorily completed a training program in Medical Oncology thus demonstrating that he/she has the required knowledge, clinical skills and competences as well as having demonstrated appropriate professional

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behaviors and has been engaged with sufficient amount of clinical work for employment in the post they are seeking.

4.2.4 Quality Management within Training institutions

Training centers in Medical Oncology should be recognized by the proper authorities of each of the EU national states, i.e., the National Authority. Each center should undergo monitoring in a structured way by the national authorities including visits and appraisal of their standards as training centers at least every five years. Each center should have an internal system of medical audit or quality assurance including features such as mortality conferences, reporting of accidents in accordance with a structured procedure.