



ABIM invites diplomates to help develop the Medical Oncology MOC exam blueprint

Based on feedback from physicians that MOC assessments should better reflect what they see in practice, in 2016 the American Board of Internal Medicine (ABIM) invited all certified medical oncologists to provide ratings of the relative frequency and importance of blueprint topics in practice.

This review process, which resulted in a new MOC exam blueprint, will be used on an ongoing basis to inform and update all MOC assessments created by ABIM. No matter what form ABIM's assessments ultimately take, they will need to be informed by front-line clinicians sharing their perspective on what is important to know.

A sample of over 300 medical oncologists, similar to the total invited population of medical oncologists in age, gender, geographic region, and time spent in direct patient care, provided the blueprint topic ratings. The ABIM Medical Oncology Exam Committee and Medical Oncology Board have used this feedback to update the blueprint for the MOC exam (beginning with the Fall 2016 administration).

To inform how exam content should be distributed across the major blueprint content categories, ABIM considered the average respondent ratings of topic frequency and importance in each of the content categories. A second source of information was the relative frequency of patient conditions in the content categories, as seen by certified medical oncologists and documented by national health care data (described further under *Content distribution* below).

To determine prioritization of specific exam content within each major medical content category, ABIM used the respondent ratings of topic frequency and importance to set thresholds for these parameters in the exam assembly process (described further under *Detailed content outline* below).

Purpose of the Medical Oncology MOC exam

The MOC exam is designed to evaluate whether a certified medical oncologist has maintained competence and currency in the knowledge and judgment required for practice. The exam emphasizes diagnosis and management of prevalent conditions, particularly in areas where practice has changed in recent years. As a result of the recent blueprint review by ABIM diplomates, future MOC exams will place less emphasis on rare conditions and focus more on situations in which physician intervention can have important consequences for patients. For conditions that are usually managed by other specialists, the focus will be on recognition rather than on management.

Exam format

The exam is composed of 240 single-best-answer multiple-choice questions, of which 40 are new questions that do not count in the examinee's score (more information on how exams are developed can be found at abim.org/about/exam-information/exam-development.aspx). All questions describe patient scenarios and ask about the work done (that is, tasks performed) by physicians in the course of practice:

- **Diagnosis:** making a diagnosis or identifying an underlying condition
- **Testing:** ordering tests for diagnosis, staging, or follow-up
- **Treatment/Care Decisions:** recommending treatment or other patient care
- **Risk Assessment/Prognosis/Epidemiology:** assessing risk, determining prognosis, and applying principles from epidemiologic studies
- **Pathophysiology/Basic Science:** understanding the pathophysiology of disease and basic science knowledge applicable to patient care

Reflecting the overall predominance of office-based practice, most questions describe patient encounters that take place in outpatient settings; some encounters will occur in hospital or other inpatient settings because most medical oncologists provide patient care in these settings as well.

Clinical information presented may include patient photographs, radiographs, computed tomograms, photomicrographs, magnetic resonance images, an equianalgesic table, bone scans, family pedigree charts, nomograms, and other media to illustrate relevant patient findings.

A tutorial, including examples of ABIM exam question format, can be found at abim.org/maintenance-of-certification/exam-information/medical-oncology/exam-tutorial.aspx.

Content distribution

Listed below are the major medical content categories that define the domain for the Medical Oncology MOC exam. The relative distribution of content is expressed as a percentage of the total exam. To determine the content distribution, ABIM considered the average respondent ratings of topic frequency and importance. To cross-validate these self-reported ratings, ABIM also considered the relative frequency of conditions seen in Medicare patients by a cohort of certified medical oncologists. Informed by these data, the Medical Oncology Exam Committee and Board have determined the content category targets shown below.

CONTENT CATEGORY	TARGET %
Hematologic Neoplasms	14%
Thoracic Cancer	11%
Breast Cancer	13%
Genitourinary Cancer	11.5%
Gynecologic Cancer	4%
Gastrointestinal Cancer	13.5%
Skin Cancer, Sarcomas, and Unknown Primary Site	6%
Anticancer Therapeutics, Clinical Research Methodology, and Ethics	10%
Supportive Care, Survivorship, and Communication	11%
Head, Neck, Thyroid, and Central Nervous System Malignancies	4%
Genetics and Tumor Biology	2%
Total	100%

How the blueprint ratings are used to assemble the MOC exam

Blueprint reviewers provided ratings of relative frequency in practice for each of the detailed content topics in the blueprint and provided ratings of the relative importance of the topics for each of the tasks described in *Exam format* above. In rating importance, reviewers were asked to consider factors such as the following:

- High risk of a significant adverse outcome
- Cost of care and stewardship of resources
- Common errors in diagnosis or management
- Effect on population health
- Effect on quality of life
- When failure to intervene by the physician deprives a patient of significant benefit

Frequency and importance were rated on a three-point scale corresponding to low, medium, or high. The median importance ratings are reflected in the *Detailed content outline* below. The Medical Oncology Exam Committee and Medical Oncology Board, in partnership with the physician community, have set the following parameters for selecting MOC exam questions according to the blueprint review ratings:

- At least 75% of exam questions will address high-importance content (indicated in green)
- No more than 25% of exam questions will address medium-importance content (indicated in yellow)
- No exam questions will address low-importance content (indicated in red)

Independent of the importance and task ratings, no more than 20% of exam questions will address low-frequency content (indicated by “LF” following the topic description).

The content selection priorities below are applicable beginning with the Fall 2016 MOC exam and are subject to change in response to future blueprint review.

Note: The same topic may appear in more than one medical content category.

Detailed content outline for the Medical Oncology MOC exam

✔ – **High Importance:** At least 75% of exam questions will address topics and tasks with this designation.

◐ – **Medium Importance:** No more than 25% of exam questions will address topics and tasks with this designation.

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HEMATOLOGIC NEOPLASMS (14% of exam)	Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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ACUTE LEUKEMIA AND MYELOYDYSPLASIA (3% of exam)

Acute myeloid leukemia (AML)					
Acute promyelocytic leukemia (APL)	LF	✔	✔	✔	◐
AML with recurrent genetic abnormalities	LF	✔	✔	◐	◐
AML with myelodysplasia-related changes		✔	◐	✔	◐
Therapy-related myeloid neoplasms	LF	◐	◐	◐	◐
AML not otherwise specified	LF	✔	✔	◐	◐
Myeloid sarcoma	LF	◐	◐	◐	✘
Acute lymphoblastic leukemia	LF	✔	✔	◐	◐
Myelodysplastic syndromes		✔	✔	✔	◐
Chronic myelomonocytic leukemia		✔	◐	◐	◐

CHRONIC MYELOID LEUKEMIA AND MYELOPROLIFERATIVE NEOPLASMS (2% of exam)

Chronic myeloid leukemia		✔	✔	✔	◐
Myeloproliferative neoplasms		✔	✔	✔	◐

CHRONIC LYMPHOPROLIFERATIVE LEUKEMIAS (2% of exam)

Chronic lymphocytic leukemia/ small lymphocytic lymphoma		✔	✔	✔	◐
Hairy cell leukemia	LF	✔	◐	✔	◐
T-cell prolymphocytic leukemia	LF	◐	◐	◐	✘

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HEMATOLOGIC NEOPLASMS <i>continued...</i> (14% of exam)		Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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CHRONIC LYMPHOPROLIFERATIVE LEUKEMIAS *continued...* (2% of exam)

T-cell large granular lymphocytic leukemia	LF	⚡	⚡	⚡	✘	✘
Monoclonal B-cell lymphocytosis		⚡	⚡	⚡	⚡	✘

HODGKIN LYMPHOMA (<2% of exam)

Early-stage disease		✔	✔	✔	✔	⚡
Advanced disease		✔	✔	✔	⚡	⚡

MULTIPLE MYELOMA AND PLASMA CELL DYSCRASIAS (2% of exam)

Multiple myeloma/plasma cell leukemia		✔	✔	✔	✔	⚡
Solitary plasmacytoma	LF	⚡	⚡	✔	⚡	⚡
Primary amyloidosis	LF	⚡	⚡	⚡	⚡	✘
Cryoglobulinemia	LF	⚡	⚡	⚡	✘	✘
Monoclonal gammopathy of undetermined significance (MGUS)		✔	✔	✔	✔	⚡
Waldenstrom's macroglobulinemia	LF	✔	✔	✔	⚡	⚡
POEMS syndrome (polyneuropathy, organ enlargement, endocrinopathy, monoclonal plasma-proliferative disorder, skin changes)	LF	⚡	⚡	⚡	✘	✘

NON-HODGKIN LYMPHOMA (4% of exam)

Low-grade disease		✔	✔	✔	✔	⚡
Intermediate-grade disease		✔	✔	✔	✔	⚡
High-grade disease		✔	✔	✔	✔	⚡

Less common histologies

Mantle cell lymphoma		✔	✔	✔	⚡	⚡
NK-T cell lymphoma	LF	⚡	⚡	⚡	✘	✘
Anaplastic large cell lymphoma	LF	⚡	⚡	⚡	⚡	⚡
Extranodal marginal zone lymphoma of mucosa-associated lymphoid tissue (MALT lymphoma)		✔	⚡	✔	⚡	⚡
Nodal marginal zone lymphoma		⚡	⚡	⚡	⚡	⚡

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HEMATOLOGIC NEOPLASMS <i>continued...</i> (14% of exam)		Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
Less common histologies <i>continued...</i>						
Human immunodeficiency virus (HIV)-associated lymphoma	LF	⚡	⚡	⚡	⚡	⚡
Human T-cell lymphotropic virus type 1-associated lymphoma (adult T-cell leukemia/lymphoma)	LF	⚡	⚡	⚡	⚡	✘
Cutaneous T-cell lymphoma	LF	⚡	⚡	⚡	⚡	✘
Primary central nervous system lymphoma	LF	⚡	⚡	⚡	⚡	✘
Post-transplantation lymphoproliferative syndromes	LF	⚡	⚡	⚡	✘	✘
Peripheral T-cell lymphoma	LF	⚡	⚡	⚡	⚡	✘

THORACIC CANCER (11% of exam)		Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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NON-SMALL CELL LUNG CANCER (9% of exam)

Early-stage disease		✔	✔	✔	✔	⚡
Locally advanced disease						
Stage IIIA disease		✔	✔	✔	✔	⚡
Stage IIIB disease		✔	✔	✔	✔	⚡
Pancoast tumor	LF	✔	✔	✔	⚡	⚡
Metastatic disease						
Adenocarcinoma		✔*	✔*	✔*	⚡*	⚡*
Squamous cell carcinoma		✔*	✔*	✔*	⚡*	⚡*

SMALL CELL LUNG CANCER (<2% of exam)

Limited disease		✔	✔	✔	✔	⚡
Extensive disease		✔	✔	✔	✔	⚡

MESOTHELIOMA AND THYMUS CANCER (<2% of exam)

Mesothelioma	LF	✔	✔	✔	⚡	⚡
Thymus cancer	LF	⚡	⚡	⚡	⚡	✘

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BREAST CANCER (13% of exam)		Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
PREMALIGNANT CONDITIONS AND HIGH-RISK FACTORS (<2% of exam)						
High-risk histologies		✔	✔	✔	✔	⚠
Genetic predispositions and other high-risk features		⚠	✔	✔	✔	⚠
CARCINOMA IN SITU (<2% of exam)						
Carcinoma in situ		✔	✔	✔	✔	⚠
EARLY-STAGE INVASIVE CARCINOMA (5% of exam)						
Neoadjuvant therapy		Not Applicable		✔	✔	⚠
Local therapy for primary breast cancer		Not Applicable		✔	✔	⚠
Adjuvant systemic therapy		Not Applicable		✔	✔	⚠
LOCALLY ADVANCED AND INFLAMMATORY DISEASE (<2% of exam)						
Locally advanced disease		✔	✔	✔	✔	⚠
Inflammatory disease	LF	✔	✔	✔	✔	⚠
LOCALLY RECURRENT DISEASE (<2% of exam)						
In-breast recurrence		✔	✔	✔	✔	⚠
Chest wall recurrence	LF	✔	✔	✔	⚠	⚠
METASTATIC DISEASE (4% of exam)						
Hormone receptor-positive, HER2-positive disease		✔*	✔*	✔*	⚠*	⚠*
Hormone receptor-positive, HER2-negative disease		✔*	✔*	✔*	⚠*	⚠*
Hormone receptor-negative, HER2-positive disease		✔*	✔*	✔*	⚠*	⚠*
Hormone receptor-negative, HER2-negative (triple-negative) disease		✔*	✔*	✔*	✔*	✔*
LESS COMMON HISTOLOGIES AND CLINICAL SCENARIOS (<2% of exam)						
Angiosarcoma of the breast	LF	⚠	⚠	⚠	⚠	✘
Phyllodes tumors	LF	⚠	⚠	⚠	⚠	✘
Intraductal papilloma	LF	⚠	⚠	⚠	✘	✘
Tubular carcinoma	LF	⚠	⚠	⚠	⚠	✘
Male breast cancer	LF	✔	✔	✔	✔	⚠

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GENITOURINARY CANCER (11.5% of exam)		Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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GERM CELL TUMORS (<2% of exam)

Seminoma	LF	✔	✔	✔	✔	⚠
Nonseminoma	LF	✔	✔	✔	✔	⚠
Germ cell tumor type not specified	LF	✔	✔	✔	⚠	⚠

PROSTATE CANCER (5% of exam)

Localized disease		✔	✔	✔	⚠	⚠
Locally advanced disease		✔	✔	✔	⚠	⚠
Prostate-specific antigen-only disease		✔	✔	✔	⚠	⚠

Metastatic disease

Metastatic hormone-sensitive disease		✔	✔	✔	✔	⚠
Metastatic castration-resistant disease		✔	✔	✔	✔	⚠

Special issues in prostate cancer

Small cell carcinoma	LF	⚠	⚠	✔	⚠	✘
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RENAL CELL CANCER (2.5% of exam)

Localized disease		⚠	⚠	⚠	⚠	⚠
Metastatic disease		✔	✔	✔	⚠	⚠

Special issues in renal cell cancer

Bilateral renal tumors	LF	⚠	⚠	⚠	⚠	✘
Wilms tumor	LF	✘	✘	✘	✘	✘
Oncocytoma	LF	✘	✘	✘	✘	✘
Non-clear cell histologies	LF	⚠	⚠	⚠	⚠	✘

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GENITOURINARY CANCER <i>continued...</i> (11.5% of exam)		Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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UROTHELIAL AND OTHER GENITOURINARY CANCERS (2.5% of exam)

Bladder cancer						
Non-muscle invasive disease	LF	⚠	⚠	⚠	⚠	✘
Muscle-invasive disease		✔	✔	✔	⚠	⚠
Metastatic disease		✔	✔	✔	⚠	⚠
Other urothelial cancers						
Renal pelvis	LF	⚠	⚠	⚠	⚠	✘
Ureter	LF	⚠	⚠	⚠	✘	✘
Urethra	LF	⚠	⚠	⚠	✘	✘

GYNECOLOGIC CANCER (4% of exam)		Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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CANCERS OF THE CERVIX, VULVA, AND VAGINA (<2% of exam)

Cancer of the cervix						
Early stages—IA, IB, and IIA	LF	⚠	⚠	⚠	⚠	✘
Locally advanced stages	LF	⚠	⚠	⚠	⚠	✘
Recurrent and metastatic disease	LF	⚠	⚠	⚠	⚠	✘
Cancers of the vulva and vagina	LF	⚠	⚠	⚠	⚠	✘

OVARIAN, FALLOPIAN TUBE, AND PRIMARY PERITONEAL CANCERS (2% of exam)

Epithelial ovarian, fallopian tube, and primary peritoneal cancers						
Stages I-IIB	LF	⚠	⚠	✔	⚠	⚠
Stages IIC-IIIIC		⚠	⚠	✔	⚠	✘
Metastatic disease		✔	✔	✔	⚠	⚠
Nonepithelial ovarian cancers	LF	⚠	⚠	⚠	⚠	✘
Borderline (low malignant potential) cancers	LF	⚠	✘	⚠	✘	✘

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GYNECOLOGIC CANCER <i>continued...</i> (4% of exam)	Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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OTHER GYNECOLOGIC MALIGNANCIES (<2% of exam)

Endometrial cancer	✔	✔	✔	✔	✔
Uterine sarcoma LF	✔	✔	✔	✔	✘
Gestational trophoblastic disease LF	✔	✔	✔	✔	✘

GASTROINTESTINAL CANCER (13.5% of exam)	Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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ANAL CANCER (<2% of exam)

Local disease	✔	✔	✔	✔	✔
Node-positive disease LF	✔	✔	✔	✔	✔
Recurrent or residual disease LF	✔	✔	✔	✔	✘
Metastatic disease LF	✔	✔	✔	✔	✘

BILIARY TREE AND GALLBLADDER CANCER (<2% of exam)

Local-regional disease LF	✔	✔	✔	✔	✔
Recurrent and metastatic disease LF	✔	✔	✔	✔	✘

COLORECTAL CANCER (4.5% of exam)

Colon cancer					
Local-regional disease	✔	✔	✔	✔	✔
Recurrent and metastatic disease	✔	✔	✔	✔	✔
Rectal cancer					
Local-regional disease	✔	✔	✔	✔	✔
Recurrent and metastatic disease	✔	✔	✔	✔	✔

ESOPHAGEAL CANCER (<2% of exam)

Local-regional disease	✔	✔	✔	✔	✔
Recurrent and metastatic disease	✔	✔	✔	✔	✔

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GASTROINTESTINAL CANCER <i>continued...</i> (13.5% of exam)	Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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GASTRIC CANCER (<2% of exam)

Resectable disease	✔	✔	✔	⚡	⚡
Unresectable and metastatic disease	✔	✔	✔	⚡	⚡

HEPATOCELLULAR CANCER (<2% of exam)

Resectable disease	LF	✔	✔	✔	⚡	⚡
Unresectable, liver-only disease		✔	✔	✔	⚡	⚡
Metastatic disease	LF	✔	✔	✔	⚡	✘

GASTROINTESTINAL NEUROENDOCRINE TUMORS (<2% of exam)

Gastrointestinal neuroendocrine tumors	LF	✔	✔	✔	⚡	⚡
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PANCREATIC CANCER (3% of exam)

Resectable disease		✔	✔	✔	⚡	⚡
Unresectable disease		✔	✔	✔	⚡	⚡
Metastatic and recurrent disease		✔	✔	✔	⚡	⚡

SMALL BOWEL AND APPENDICEAL CANCER (<2% of exam)

Small bowel cancer	LF	⚡	⚡	✔	⚡	✘
Appendiceal cancer	LF	⚡	⚡	⚡	⚡	✘

SKIN CANCER, SARCOMAS, AND UNKNOWN PRIMARY SITE (6% of exam)	Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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MELANOMA (<2% of exam)

Melanoma in situ	LF	⚡	⚡	⚡	⚡	✘
Invasive melanoma		✔	✔	✔	⚡	⚡
Regional nodal and in-transit metastasis		⚡	⚡	✔	⚡	⚡
Metastatic disease		✔	✔	✔	⚡	⚡

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SKIN CANCER, SARCOMAS, AND UNKNOWN PRIMARY SITE <i>continued...</i> (6% of exam)		Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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OTHER SKIN CANCERS (<2% of exam)

Squamous cell and basal cell cancer of the skin						
Localized disease	LF	⚡	⚡	⚡	✘	✘
Nodal and in-transit metastasis	LF	⚡	⚡	⚡	✘	✘
Metastatic disease	LF	⚡	⚡	⚡	⚡	✘
Merkel cell carcinoma						
Localized disease	LF	⚡	⚡	⚡	✘	✘
Metastatic disease	LF	⚡	⚡	⚡	✘	✘

BONE AND SOFT-TISSUE SARCOMAS (<2% of exam)

Localized primary disease	LF	⚡	⚡	⚡	⚡	✘
Local disease recurrence	LF	⚡	⚡	⚡	⚡	✘
Metastatic disease or distant recurrence	LF	⚡	⚡	✔	⚡	✘
Gastrointestinal stromal tumor (GIST)						
Localized and primary disease	LF	⚡	⚡	✔	⚡	⚡
Metastatic disease	LF	⚡	⚡	✔	⚡	⚡

UNKNOWN PRIMARY SITE (2.5% of exam)

Unknown primary site		✔	✔	✔	⚡	✘
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ANTICANCER THERAPEUTICS, CLINICAL RESEARCH METHODOLOGY, AND ETHICS (10% of exam)		Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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PRINCIPLES OF ALLIED DISCIPLINES (<2% of exam)

Surgical oncology		⚡	⚡	⚡	⚡	⚡
Radiation oncology		⚡	⚡	⚡	⚡	⚡
Interventional radiology		⚡	⚡	⚡	⚡	⚡
Pathology		✔	✔	✔	⚡	⚡

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ANTICANCER THERAPEUTICS, CLINICAL RESEARCH METHODOLOGY, AND ETHICS <i>continued...</i> (10% of exam)	Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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ANTICANCER THERAPEUTICS (8% of exam)

Cytotoxic chemotherapy agents					
Alkylating agents	⚡	⚡	✔	⚡	⚡
Antimetabolites	✔	✔	✔	⚡	⚡
Antitubulin agents	✔	✔	✔	✔	⚡
Anthracyclines	✔	✔	✔	✔	⚡
Topoisomerase I inhibitors	✔	✔	✔	⚡	⚡
Topoisomerase II inhibitors	✔	✔	✔	⚡	⚡
Bleomycin and other DNA-damaging agents	⚡	✔	✔	⚡	⚡
Chemotherapy-drug interactions	✔	✔	✔	⚡	⚡
Hormonal therapies					
Estrogens and selective estrogen response modifiers	✔	✔	✔	✔	✔
Progestins and antiprogestins	⚡	⚡	⚡	⚡	⚡
Aromatase inhibitors	✔	✔	✔	✔	✔
Androgens and antiandrogens	✔	✔	✔	⚡	⚡
Gonadotropin-releasing hormone analogues	✔	✔	✔	⚡	⚡
Glucocorticoids	✔	✔	✔	⚡	⚡
Retinoids	⚡	⚡	⚡	⚡	⚡

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ANTICANCER THERAPEUTICS *continued...* (8% of exam)

Small molecule kinase inhibitors					
BCR-ABL1 inhibitors	✔	✔	✔	✔	⚠
Epidermal growth factor receptor (EGFR) inhibitors	✔	✔	✔	✔	⚠
Vascular endothelial growth factor receptor (VEGFR)/multitargeted inhibitors	✔	✔	✔	✔	⚠
BRAF inhibitors	✔	✔	✔	⚠	⚠
Anaplastic lymphoma kinase (ALK) and mesenchymal epithelial transition (MET) growth factor inhibitors	LF	⚠	✔	⚠	⚠
RET inhibitors	LF	⚠	⚠	⚠	✘
Mitogen-activated protein kinase (MEK) inhibitors	LF	⚠	⚠	⚠	⚠
Bruton's tyrosine kinase (BTK) inhibitors		⚠	✔	⚠	⚠
Janus kinase (JAK) inhibitors		✔	✔	⚠	⚠
Phosphoinositide-3 kinase (PI3K) inhibitors	LF	⚠	⚠	⚠	⚠
Mammalian target of rapamycin (mTOR) inhibitors		⚠	⚠	⚠	⚠
Cyclin-dependent kinase (CDK) inhibitors	LF	⚠	⚠	⚠	⚠
Agents with epigenetic activity					
Histone deacetylase (HDAC) inhibitors	LF	⚠	⚠	⚠	⚠
DNA methyltransferase inhibitors	LF	⚠	⚠	⚠	⚠
Metabolic inhibitors other than antimetabolites	LF	⚠	⚠	⚠	✘

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ANTICANCER THERAPEUTICS *continued...* (8% of exam)

Monoclonal antibodies and antibody conjugates other than immune checkpoint inhibitors					
Monoclonal antibodies targeting EGFR, HER2, HER3, HER4	✔	✔	✔	✔	✔
Monoclonal antibodies targeting VEGFR pathway	✔	✔	✔	✔	⚠
Monoclonal antibodies targeting B cell antigens (including CD20)	✔	✔	✔	✔	⚠
Monoclonal antibodies targeting interleukin-6 (IL6) LF	✘	✘	✘	✘	✘
Bispecific monoclonal antibodies LF	⚠	⚠	⚠	⚠	⚠

Monoclonal antibody immune checkpoint inhibitors					
Agents targeting cytotoxic T-lymphocyte-associated antigen 4 (CTLA4) LF	⚠	⚠	⚠	⚠	⚠
Agents targeting programmed cell death protein 1 (PD-1) and programmed cell death ligand 1 (PD-L1)	✔	✔	✔	✔	⚠
Tumor vaccines and viral-based immunotherapeutics LF	⚠	⚠	⚠	✘	✘
Cytokines LF	⚠	⚠	⚠	✘	✘

Agents with other novel or specific targets					
Proteasome inhibitors	✔	✔	✔	⚠	⚠
Immunomodulatory drugs (IMiDs)	✔	✔	✔	⚠	⚠
Hedgehog (Hh) inhibitors LF	⚠	⚠	⚠	⚠	✘
Poly(ADP-ribose) polymerase (PARP) inhibitors LF	⚠	⚠	⚠	⚠	⚠
Arsenicals LF	⚠	⚠	⚠	⚠	✘

Cellular therapeutics					
High-dose therapy with stem cell rescue (autologous and allogeneic) LF	⚠	⚠	⚠	⚠	⚠
Chimeric antigen receptor (CAR) T-cell therapy LF	✘	✘	✘	✘	✘

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CLINICAL RESEARCH METHODOLOGY AND ETHICS (<2% of exam)

Clinical research methodology					
Design and interpretation of clinical trials	Not Applicable			⚡	⚡
Tumor assessment, imaging, and end points	✔	✔	✔	⚡	⚡
Surrogate end points	⚡	⚡	⚡	⚡	⚡
Ethics					
Human subjects and regulatory and legal issues	⚡	⚡	⚡	⚡	Not Applicable
Physician behavior and conflict of interest	⚡	⚡	⚡	⚡	Not Applicable

SUPPORTIVE CARE, SURVIVORSHIP, AND COMMUNICATION (11% of exam)	Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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CLINICAL MANIFESTATIONS OF ADVANCED CANCER AND ITS TREATMENT (4.5% of exam)

Cutaneous and mucosal manifestations	✔	⚡	✔	⚡	⚡
Endocrine manifestations	⚡	⚡	⚡	⚡	⚡
Gastrointestinal manifestations					
Ascites and peritoneal metastases	✔	✔	✔	⚡	⚡
Liver manifestations	✔	✔	✔	⚡	⚡
Constipation	✔	⚡	✔	⚡	⚡
Diarrhea	✔	✔	✔	⚡	⚡
Nausea and vomiting	✔	✔	✔	⚡	⚡
Bowel obstruction	✔	✔	✔	⚡	⚡
Esophagitis	✔	✔	✔	⚡	⚡

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SUPPORTIVE CARE, SURVIVORSHIP, AND COMMUNICATION <i>continued...</i> (11% of exam)	Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science

CLINICAL MANIFESTATIONS OF ADVANCED CANCER AND ITS TREATMENT *continued...* (4.5% of exam)

Hematologic manifestations					
Bleeding	✔	✔	✔	⚠	⚠
Thrombosis	✔	✔	✔	✔	⚠
Neutropenia	✔	✔	✔	✔	⚠
Anemia	✔	✔	✔	✔	⚠
Transfusion reactions	✔	✔	✔	⚠	⚠
	LF				
Musculoskeletal manifestations					
	✔	⚠	✔	⚠	⚠
Neurologic manifestations					
	✔	✔	✔	⚠	⚠
Renal, metabolic, and nutritional manifestations					
	✔	⚠	✔	⚠	⚠
Paraneoplastic syndromes	✔	⚠	✔	⚠	⚠
	LF				
Thoracic manifestations					
Pleural and pericardial effusions	✔	✔	✔	⚠	⚠
Pneumonitis	✔	✔	✔	⚠	⚠
Dyspnea	✔	✔	✔	⚠	⚠
Cough	✔	✔	✔	⚠	⚠
Fatigue	✔	✔	✔	⚠	⚠
Psychiatric manifestations					
Depression	✔	⚠	✔	⚠	✘
Anxiety	✔	⚠	✔	⚠	✘
Delirium	✔	⚠	⚠	⚠	✘
	LF				
Infectious risks and complications					
Infections	✔	✔	✔	⚠	⚠
Febrile neutropenia	✔	✔	✔	✔	⚠

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CANCER PAIN (2% of exam)

Use of opioids	✔	✔	✔	⚡	⚡
Use of nonopioids	✔	⚡	✔	⚡	⚡

SURVIVORSHIP ISSUES (<2% of exam)

Fertility	⚡	⚡	✔	⚡	✘
Second primary cancers	✔	✔	✔	⚡	⚡
Secondary cancer prevention	✔	✔	✔	⚡	⚡
Nonmalignant sequelae	⚡	⚡	⚡	⚡	⚡
Surveillance	✔	✔	✔	✔	✘

END-OF-LIFE ISSUES (2% of exam)

Hospice	✔	✔	✔	✔	✘
Feeding and nutrition	✔	⚡	✔	⚡	⚡
Decision making	✔	✔	✔	✔	⚡

PROCEDURE-RELATED ISSUES (<2% of exam)

Chemotherapy administration	✔	✔	✔	✔	⚡
Bone marrow aspiration, biopsy, and interpretation	✔	✔	✔	✔	⚡
Ommaya reservoir and lumbar puncture	LF	⚡	⚡	⚡	✘
Tumor assessment	✔	✔	✔	⚡	⚡
Thoracentesis	⚡	⚡	⚡	⚡	✘
Paracentesis	⚡	⚡	⚡	⚡	⚡
Feeding tubes	⚡	⚡	⚡	⚡	✘

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COMMUNICATION (<2% of exam)

Communicating prognosis and other clinical information	Not Applicable	✔		Not Applicable	
Discussing goals of care	Not Applicable	✔		Not Applicable	
Discussing survivorship issues	Not Applicable	✔		Not Applicable	

HEAD, NECK, THYROID, AND CENTRAL NERVOUS SYSTEM MALIGNANCIES (4% of exam)	Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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SQUAMOUS CELL CARCINOMA OF THE HEAD AND NECK (<2% of exam)

Locoregionally limited disease	✔	✔	✔	⚠	⚠
Metastatic disease	✔	✔	✔	⚠	⚠

SALIVARY GLAND TUMORS (<2% of exam)

Locoregionally limited disease	LF	⚠	⚠	⚠	⚠	✘
Metastatic disease	LF	⚠	⚠	⚠	⚠	✘

THYROID CANCER (<2% of exam)

Papillary	LF	⚠	⚠	⚠	⚠	⚠
Medullary	LF	⚠	⚠	⚠	⚠	⚠
Anaplastic	LF	⚠	⚠	⚠	⚠	✘

NASOPHARYNGEAL CARCINOMA (<2% of exam)

Local and regional disease	LF	⚠	⚠	✔	⚠	⚠
Metastatic disease	LF	⚠	⚠	⚠	⚠	✘

CENTRAL NERVOUS SYSTEM MALIGNANCIES (<2% of exam)

Primary central nervous system lesions						
Astrocytoma and glioblastoma multiforme		✔	✔	✔	⚠	⚠
Oligodendroglioma and other central nervous system lesions	LF	⚠	⚠	⚠	⚠	✘

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CENTRAL NERVOUS SYSTEM MALIGNANCIES *continued...* (<2% of exam)

Metastatic central nervous system lesions					
Parenchymal metastases	✔	✔	✔	⚠	✘
Meningeal metastases	LF	⚠	⚠	⚠	⚠

GENETICS AND TUMOR BIOLOGY (2% of exam)	Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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CANCER BIOLOGY AND GENETICS (<2% of exam)

Biology of normal cells and the basic processes of carcinogenesis	LF	⚠	⚠	⚠	⚠	⚠
Genomics		⚠	⚠	⚠	⚠	⚠
Cell cycle	LF	✘	✘	⚠	✘	✘
Receptors and signal transduction		⚠	⚠	⚠	⚠	⚠
Cell proliferation and apoptosis	LF	✘	✘	⚠	✘	✘
Tumor invasion and metastases		✔	✔	✔	⚠	⚠
Angiogenesis		⚠	⚠	⚠	⚠	⚠
Molecular techniques		⚠	⚠	⚠	✘	⚠

TUMOR IMMUNOLOGY (<2% of exam)

Tumor immunology		⚠	⚠	✔	✘	⚠
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HERITABLE CANCER SYNDROMES (<2% of exam)

Li-Fraumeni syndrome (TP53)	LF	⚠	⚠	⚠	⚠	✘
BRCA1 and BRCA2 syndromes		✔	✔	✔	✔	⚠
Familial colorectal cancer						
Familial adenomatous polyposis	LF	⚠	⚠	⚠	⚠	⚠
Hereditary nonpolyposis colorectal cancer		✔	✔	✔	⚠	⚠

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GENETICS AND TUMOR BIOLOGY <i>continued...</i> (2% of exam)		Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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HERITABLE CANCER SYNDROMES *continued...* (<2% of exam)

Multiple endocrine neoplasia and familial medullary thyroid cancer syndromes	LF	⚡	⚡	⚡	⚡	✘
Retinoblastoma	LF	✘	✘	✘	✘	✘
Cadherin 1 (CDH1) mutation syndrome	LF	✘	✘	✘	✘	✘
Familial melanoma and pancreas cancer (CDKN2A)	LF	✘	✘	✘	✘	✘
Von Hippel-Lindau syndrome	LF	⚡	✘	✘	✘	✘

EPIDEMIOLOGY OF CANCER (<2% of exam)

Cancer statistics	Not Applicable			⚡	Not Applicable
Staging of cancer	Not Applicable	✔	Not Applicable	✔	Not Applicable
Epidemiologic methods	Not Applicable			⚡	Not Applicable
Chemoprevention—concepts and clinical trials	⚡	⚡	⚡	⚡	⚡