

COMPREHENSIVE MOCK EXAM 3

Supplemental to: Medical Oncology Board Review 2026-2027

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ABIM Medical Oncology Certification Examination — 240 questions, single-best-answer, domain-weighted to the 2026 blueprint; five options (A-E) per the parent-book specification

Board-Review Questions

1. A patient with a remote history of hormone receptor-positive breast cancer develops new liver lesions and bone pain. Imaging is compatible with metastatic recurrence, and a liver lesion is safely accessible. What should be done before choosing systemic therapy?

- A. Assume the receptor profile is unchanged and begin the prior endocrine regimen without tissue confirmation
- B. Order serum tumor markers alone and treat only if the markers are elevated
- C. Proceed directly to empiric chemotherapy without confirming metastatic breast cancer when a biopsy is feasible
- D. Biopsy the original breast surgical bed rather than an accessible metastatic lesion to determine current metastatic biology
- E. Biopsy a metastatic site and reassess ER, PR, and HER2 when feasible

2. A patient undergoes resection of stage II colon cancer with no high-risk pathologic features. The tumor is mismatch-repair deficient because of loss of MSH2/MSH6. Which adjuvant principle is most appropriate?

- A. Adjuvant fluoropyrimidine monotherapy is required because dMMR predicts enhanced benefit from 5-fluorouracil alone
- B. Observation is appropriate; fluoropyrimidine monotherapy is not routinely beneficial for low-risk dMMR stage II disease
- C. Adjuvant FOLFOX for every stage II colon cancer regardless of high-risk features or mismatch-repair status
- D. Pelvic chemoradiation after colectomy because all stage II colorectal cancers require radiation
- E. Adjuvant irinotecan-based chemotherapy because dMMR stage II disease has a high enough recurrence risk to justify treatment

3. A 34-year-old patient presents with bruising, pancytopenia, disseminated intravascular coagulation, and circulating abnormal promyelocytes. Acute promyelocytic leukemia is strongly suspected but molecular confirmation is pending. What should be done immediately?

- A. Start all-trans retinoic acid while urgently confirming PML::RARA
- B. Begin arsenic trioxide alone and defer differentiation therapy until the fusion result returns

C. Start conventional AML induction immediately and add ATRA only if PML::RARA is later confirmed

D. Provide transfusion support alone while awaiting molecular confirmation before leukemia-directed treatment

E. Begin hydroxyurea for cytoreduction and withhold ATRA until the coagulopathy has resolved

4. A healthy 62-year-old man has PSA-detected prostate cancer, Gleason grade group 1, a small volume of tumor on biopsy, and no high-risk clinical features. What is the preferred initial strategy?

A. Immediate radical prostatectomy is required because any biopsy-proven prostate cancer must be treated definitively

B. External-beam radiation plus long-term androgen deprivation is the preferred strategy for low-volume grade group 1 disease

C. Begin androgen-deprivation therapy alone even though the cancer is localized and low risk

D. Observe without structured PSA or repeat risk assessment because low-risk prostate cancer requires no surveillance

E. Active surveillance with structured PSA, examination, imaging, and repeat tissue assessment as appropriate

5. A never-smoker with newly diagnosed metastatic lung adenocarcinoma is clinically stable and has not yet started systemic therapy. What testing strategy is most appropriate before selecting treatment?

A. PD-L1 testing alone before treatment selection

B. EGFR testing alone, stopping if EGFR is wild type

C. Broad molecular profiling for actionable drivers together with PD-L1 assessment

D. Start empiric immunotherapy before molecular results return

E. A limited panel that omits uncommon actionable fusions

6. A patient with metastatic pancreatic cancer takes scheduled oral morphine and has predictable episodes of severe breakthrough pain several times daily. Baseline pain is otherwise controlled. What is the best immediate strategy?

- A.** Add an immediate-release opioid rescue dose while continuing the baseline regimen
- B.** Start naloxone before every scheduled opioid dose
- C.** Use a transdermal opioid only for each breakthrough episode
- D.** Delay analgesia until the next scheduled long-acting dose
- E.** Stop all opioids and substitute acetaminophen alone

7. A patient undergoes complete excision and sentinel-node staging of a stage IIC cutaneous melanoma. There is no residual disease. Which adjuvant systemic therapy should be discussed?

- A.** Observation with routine surveillance alone
- B.** Adjuvant dabrafenib plus trametinib without confirming BRAF V600 status
- C.** Adjuvant ipilimumab instead of anti-PD-1 therapy
- D.** Adjuvant anti-PD-1 therapy with pembrolizumab or nivolumab
- E.** Adjuvant dacarbazine-based chemotherapy

8. A patient has p16-positive squamous-cell carcinoma of the tonsil with cervical lymph-node involvement and no distant metastases. What is the most important implication of p16 positivity in this setting?

- A.** Surrogate for HPV-associated oropharyngeal cancer with distinct staging
- B.** p16 proves active HPV infection in every tumor
- C.** p16 changes the primary site to the nasopharynx
- D.** p16 predicts resistance to definitive radiation
- E.** p16 makes smoking history irrelevant to prognosis

9. A randomized trial reports a 2-year recurrence rate of 20% with standard therapy and 12% with a new adjuvant regimen. Assuming these event rates are causal, what is the number needed to treat to prevent one recurrence by 2 years?

- A.** 5 patients

- B. 8 patients**
- C. 20 patients**
- D. 13 patients**
- E. 25 patients**

10. A fit patient has newly diagnosed stage IIIC high-grade serous ovarian carcinoma. Imaging suggests that complete gross cytoreduction is feasible with acceptable morbidity at an experienced center. What is the preferred initial approach?

- A. Neoadjuvant platinum-taxane chemotherapy followed by interval surgery despite clear upfront resectability**
- B. Platinum-taxane chemotherapy alone with no attempt at cytoreduction**
- C. Primary cytoreductive surgery without postoperative systemic chemotherapy**
- D. Definitive pelvic radiation instead of surgery and systemic therapy**
- E. Primary cytoreductive surgery followed by platinum-taxane chemotherapy**

11. A healthy postmenopausal woman has completely resected stage I, ER-positive, HER2-negative breast cancer and does not require chemotherapy. Which adjuvant systemic treatment is most appropriate?

- A. An aromatase inhibitor-based endocrine therapy strategy**
- B. Adjuvant trastuzumab-based therapy despite a HER2-negative tumor**
- C. Adjuvant multiagent chemotherapy solely because the patient is postmenopausal, regardless of recurrence risk**
- D. Observation without endocrine therapy after resection of an ER-positive invasive cancer**
- E. Tamoxifen is contraindicated after menopause, so no endocrine therapy should be offered**

12. A fit patient undergoes complete resection of stage III colon adenocarcinoma. Which adjuvant chemotherapy backbone is standard?

- A. Observation alone after resection because stage III colon cancer does not benefit from adjuvant systemic therapy**

- B.** An oxaliplatin-fluoropyrimidine regimen such as FOLFOX or CAPOX
- C.** Single-agent irinotecan as standard adjuvant therapy after complete resection of stage III disease
- D.** Pelvic chemoradiation instead of systemic chemotherapy for a completely resected colon primary
- E.** Cetuximab-based adjuvant therapy selected solely by RAS wild-type status in resected stage III colon cancer

13. A patient with newly diagnosed low-risk acute promyelocytic leukemia has a presenting white blood cell count of 4,000/microliter and no major contraindication to arsenic. Which induction strategy is preferred?

- A.** All-trans retinoic acid plus arsenic trioxide
- B.** All-trans retinoic acid plus anthracycline-based chemotherapy
- C.** Arsenic trioxide monotherapy without all-trans retinoic acid
- D.** Conventional cytarabine-anthracycline AML induction alone
- E.** Observation until molecular remission is documented

14. A patient has localized high-risk prostate cancer and chooses definitive external-beam radiation therapy. Which systemic treatment is routinely combined with radiation to improve disease control?

- A.** Long-course androgen-deprivation therapy
- B.** Short-course androgen-deprivation therapy for only several weeks
- C.** Docetaxel monotherapy without androgen deprivation
- D.** An androgen-receptor pathway inhibitor without androgen deprivation
- E.** Radiation therapy alone with no systemic androgen suppression

15. A patient has metastatic lung adenocarcinoma with an EGFR exon 19 deletion, no symptomatic CNS disease, and no prior systemic therapy. Which treatment is an appropriate preferred first-line strategy?

- A.** Platinum-pemetrexed chemotherapy without EGFR-directed therapy
- B.** Pembrolizumab monotherapy based only on PD-L1 expression

- C. An osimertinib-based EGFR-targeted regimen
- D. Sotorasib as treatment for the EGFR exon 19 deletion
- E. Alectinib as treatment for the EGFR exon 19 deletion

16. A patient with advanced cancer is starting a regularly scheduled opioid for persistent pain. He has no bowel obstruction. Which preventive measure should usually be started at the same time?

- A. A stimulant laxative with or without an osmotic agent
- B. A pancreatic enzyme supplement before every meal
- C. A proton-pump inhibitor as the sole bowel regimen
- D. A high-dose antidiarrheal on a fixed schedule
- E. A low-residue diet without pharmacologic prophylaxis

17. A 38-year-old premenopausal woman has high-risk node-positive ER-positive, HER2-negative breast cancer after chemotherapy. She remains premenopausal. Which endocrine approach provides greater recurrence reduction than tamoxifen alone for an appropriately selected high-risk patient?

- A. Tamoxifen alone without ovarian function suppression
- B. An aromatase inhibitor without ovarian function suppression
- C. Ovarian function suppression combined with an aromatase inhibitor
- D. Ovarian function suppression without an endocrine partner
- E. Fulvestrant as routine adjuvant endocrine monotherapy

18. A patient has untreated metastatic left-sided colon cancer that is RAS wild type, BRAF wild type, mismatch-repair proficient, and potentially responsive to intensive therapy. Which first-line biologic strategy is preferred with doublet chemotherapy?

- A. Doublet chemotherapy plus bevacizumab as the preferred biologic for every left-sided RAS-wild-type tumor
- B. Pembrolizumab because left-sided primary location predicts checkpoint sensitivity despite proficient mismatch repair

- C. An anti-EGFR antibody such as cetuximab or panitumumab
- D. Encorafenib plus cetuximab despite absence of a BRAF V600E mutation
- E. HER2-directed therapy without evidence of HER2 amplification

19. A fit 52-year-old patient has newly diagnosed AML with a FLT3 internal tandem duplication and is receiving intensive induction chemotherapy. Which targeted agent is commonly incorporated into frontline induction and consolidation?

- A. Gilteritinib
- B. Midostaurin
- C. Ivosidenib
- D. Venetoclax
- E. Gemtuzumab ozogamicin

20. A man develops a rising PSA after prostatectomy, and conventional CT and bone scan are negative. Which imaging modality has the greatest sensitivity for localizing recurrent prostate cancer at low PSA levels?

- A. Conventional bone scan
- B. CT of the abdomen and pelvis
- C. Pelvic MRI
- D. PSMA-targeted PET imaging
- E. Fluciclovine PET

21. A patient has clinically resectable stage IIIB cutaneous melanoma with a palpable nodal metastasis and no distant disease. Which systemic strategy can be used before surgery to improve event-free outcomes?

- A. Upfront surgery followed by observation
- B. Neoadjuvant BRAF-MEK therapy regardless of BRAF status
- C. Definitive nodal-basin radiation alone

- D. Surgery first with systemic therapy only at recurrence**
- E. Neoadjuvant anti-PD-1-based therapy in an evidence-based regimen**

22. A patient with treatment-naive metastatic NSCLC has an EGFR exon 20 insertion. Which regimen reflects a biomarker-matched frontline approach?

- A. Osimertinib monotherapy at a sensitizing-EGFR mutation dose**
- B. Amivantamab with carboplatin and pemetrexed**
- C. Platinum-pemetrexed chemotherapy without amivantamab**
- D. Pembrolizumab monotherapy based on PD-L1 expression**
- E. Erlotinib as though the exon 20 insertion were a classic sensitizing EGFR mutation**

23. A fit patient has unresected, locally advanced squamous-cell carcinoma of the oropharynx requiring definitive nonsurgical treatment. Which regimen is a standard curative approach?

- A. Radiation alone despite fitness for concurrent cisplatin and a need for definitive treatment intensification**
- B. Induction chemotherapy alone followed by observation without definitive local therapy**
- C. Immediate palliative systemic therapy without curative-intent radiation in unresected locally advanced disease**
- D. Cetuximab with radiation is automatically preferred to cisplatin in a fit patient with no cisplatin contraindication**
- E. Definitive radiation with concurrent high-dose or weekly cisplatin in an appropriate patient**

24. A phase III trial of first-line therapy for metastatic cancer reports an overall-survival hazard ratio of 0.72 with a 95% confidence interval of 0.58 to 0.89. Which interpretation is most accurate?

- A. The result is not statistically significant because the hazard ratio is not zero**
- B. The experimental arm reduces the absolute risk of death by 28% at every time point**
- C. The experimental arm has a lower instantaneous risk of death, and the result is statistically significant**

- D.** The two arms are statistically equivalent because the confidence interval is wide
- E.** The experimental arm guarantees a 28% longer median survival for each patient

25. A patient with disseminated ovarian cancer has inoperable malignant bowel obstruction, colicky pain, persistent vomiting, and high nasogastric output. She is not a surgical candidate and wants symptom-focused care. Which medication can reduce gastrointestinal secretions and vomiting?

- A.** Octreotide therapy
- B.** High-dose senna alone
- C.** Metoclopramide at a prokinetic dose
- D.** Oral magnesium citrate
- E.** Loperamide

26. A 55-year-old woman has a 1.4-cm, node-negative, ER-positive, PR-positive, HER2-negative invasive ductal carcinoma with intermediate grade. The benefit of adjuvant chemotherapy is uncertain. Which test can help estimate chemotherapy benefit in this setting?

- A.** Serial serum CA 15-3 measurements
- B.** Ki-67 immunohistochemistry alone as a chemotherapy-benefit assay
- C.** A validated multigene recurrence assay such as the 21-gene assay
- D.** Circulating tumor DNA testing as the validated adjuvant chemotherapy-benefit tool in this setting
- E.** Whole-body PET/CT to estimate genomic recurrence risk

27. A patient with metastatic colon cancer is being considered for cetuximab. Tumor sequencing shows a KRAS exon 2 activating mutation. What is the implication?

- A.** The mutation predicts increased benefit from cetuximab
- B.** The mutation has no relevance to anti-EGFR treatment selection
- C.** The tumor is resistant to anti-EGFR monoclonal antibody therapy

D. Cetuximab should be combined with a BRAF inhibitor because any RAS mutation activates BRAF

E. The mutation should be ignored if the primary tumor is left sided

28. A 78-year-old patient with newly diagnosed AML has significant comorbidity and is not a candidate for intensive induction. Cytogenetic and molecular testing is pending. Which regimen is a standard lower-intensity frontline option?

A. Standard-dose 7+3 induction chemotherapy

B. Single-agent azacitidine

C. Low-dose cytarabine alone

D. Supportive transfusions without AML-directed therapy

E. Azacitidine plus venetoclax

29. A patient with newly diagnosed advanced ovarian cancer has poor performance status and imaging suggesting that complete cytoreduction is very unlikely without major morbidity. What is the preferred treatment concept after tissue confirmation?

A. Primary cytoreductive surgery regardless of performance status or likelihood of achieving meaningful complete gross resection

B. Observation until symptoms worsen because advanced ovarian cancer should not receive systemic therapy before surgery

C. Single-agent bevacizumab without platinum-taxane chemotherapy as initial treatment for newly diagnosed advanced disease

D. Pelvic radiation as the sole initial therapy for diffuse advanced ovarian carcinoma

E. Neoadjuvant platinum-taxane chemotherapy followed by interval cytoreductive surgery in responders

30. A fit patient is newly diagnosed with metastatic hormone-sensitive prostate cancer. Which treatment principle is standard for most patients?

A. Use androgen-deprivation therapy alone and add another systemic agent only after castration resistance develops

- B.** Give docetaxel monotherapy without continued androgen deprivation
- C.** Use an androgen-receptor pathway inhibitor without androgen deprivation because combination therapy is unnecessary
- D.** Intensify androgen deprivation with an androgen-receptor pathway inhibitor or other evidence-based combination rather than ADT alone
- E.** Reserve treatment intensification for patients who have already progressed to metastatic castration-resistant disease

31. A patient with metastatic ALK-rearranged lung adenocarcinoma has small asymptomatic brain metastases. Which third-generation ALK tyrosine kinase inhibitor is a preferred first-line option with particularly strong CNS activity?

- A.** Alectinib
- B.** Lorlatinib
- C.** Brigatinib
- D.** Crizotinib
- E.** Ceritinib

32. A patient with end-stage lung cancer has severe dyspnea at rest despite treatment of reversible causes and supplemental oxygen for documented hypoxemia. Which intervention has the best evidence for palliation of refractory breathlessness?

- A.** High-dose diuretics despite normal volume status
- B.** Escalating oxygen flow despite normal oxygen saturation
- C.** Routine broad-spectrum antibiotics despite no infection
- D.** Low-dose systemic opioid therapy titrated to symptom relief
- E.** Continuous neuromuscular blockade outside an ICU

33. A patient has resected HR-positive, HER2-negative breast cancer with multiple positive axillary nodes and meets high-risk criteria for a two-year adjuvant CDK4/6-inhibitor strategy in addition to endocrine therapy. Which agent is used in this approach?

- A. Ribociclib for a three-year adjuvant strategy
- B. Palbociclib
- C. Adjuvant abemaciclib
- D. Everolimus
- E. Fulvestrant

34. A patient with BRAF V600E-mutated metastatic colorectal cancer progresses after an initial chemotherapy-containing regimen. Which targeted combination is standard?

- A. Cetuximab monotherapy
- B. Encorafenib plus cetuximab
- C. Vemurafenib monotherapy
- D. Continue the prior chemotherapy regimen
- E. Trastuzumab plus pertuzumab

35. A 41-year-old patient has favorable-risk core-binding-factor AML with RUNX1::RUNX1T1 and is eligible for intensive therapy. Which agent may be added to intensive chemotherapy because of particular benefit in this biologic subgroup?

- A. Midostaurin (FLT3 inhibitor)
- B. Ivosidenib (IDH1 inhibitor)
- C. Venetoclax-based therapy
- D. Gemtuzumab ozogamicin
- E. Quizartinib (FLT3 inhibitor)

36. A fit patient has newly diagnosed metastatic BRAF-wild-type cutaneous melanoma and no autoimmune contraindication. Which first-line regimen offers a high chance of durable disease control?

- A. Pembrolizumab monotherapy
- B. Nivolumab plus relatlimab

- C. Nivolumab plus ipilimumab
- D. Nivolumab monotherapy
- E. Ipilimumab monotherapy

37. A fit 60-year-old man has newly diagnosed high-volume metastatic hormone-sensitive prostate adenocarcinoma and is a good candidate for chemotherapy. Which triplet regimen is an evidence-based option?

- A. Androgen-deprivation therapy alone
- B. Docetaxel without androgen deprivation
- C. ADT plus docetaxel plus darolutamide
- D. Darolutamide without androgen deprivation
- E. Delay intensification until castration resistance

38. A patient with recurrent metastatic head and neck squamous-cell carcinoma has a PD-L1 combined positive score of 30, low-volume asymptomatic disease, and no contraindication to immunotherapy. Which first-line option is reasonable?

- A. Pembrolizumab plus platinum and fluorouracil
- B. Platinum and fluorouracil without immunotherapy
- C. Cetuximab monotherapy
- D. Observation until symptomatic progression
- E. Pembrolizumab monotherapy

39. Investigators design a noninferiority trial comparing a shorter adjuvant regimen with standard therapy. The prespecified noninferiority margin for the hazard ratio is 1.25. The observed hazard ratio is 1.08 with a 95% confidence interval of 0.94 to 1.20. What conclusion is supported?

- A. The trial is inconclusive because the confidence interval includes 1.00
- B. The shorter regimen is inferior because the point estimate exceeds 1.00
- C. The shorter regimen is equivalent because both confidence limits are below 1.00

- D.** The shorter regimen is proven superior to standard therapy
- E.** The shorter regimen meets the prespecified criterion for noninferiority

40. A patient undergoes complete resection of an ALK-positive stage II lung adenocarcinoma and has recovered from surgery. Which adjuvant targeted therapy is appropriate?

- A.** Crizotinib
- B.** Lorlatinib
- C.** Alectinib
- D.** Osimertinib
- E.** Observation

41. A postmenopausal patient with stage III HR-positive, HER2-negative early breast cancer will receive an aromatase inhibitor and is considering the adjuvant CDK4/6-inhibitor strategy studied as a three-year course in selected stage II or III disease. Which agent is used?

- A.** Abemaciclib
- B.** Palbociclib
- C.** Everolimus
- D.** Fulvestrant
- E.** Ribociclib

42. A patient has newly diagnosed metastatic colorectal cancer with high-level microsatellite instability and no contraindication to immune checkpoint therapy. Which first-line treatment is preferred?

- A.** Pembrolizumab monotherapy
- B.** FOLFOX plus bevacizumab
- C.** Cetuximab monotherapy
- D.** Observation until symptoms develop
- E.** Irinotecan monotherapy

43. A patient with metastatic breast cancer has confusion, constipation, dehydration, and a corrected serum calcium of 14.6 mg/dL. Renal function is mildly impaired. What is the best initial treatment approach?

- A.** IV isotonic fluid, calcitonin, and an antiresorptive agent
- B.** Observation until the calcium exceeds 16 mg/dL
- C.** Oral calcium and vitamin D supplementation
- D.** Fluid restriction plus a thiazide diuretic
- E.** Immediate parathyroidectomy without further evaluation

44. A patient with relapsed AML has an IDH1 R132 mutation and is not proceeding directly to curative allogeneic transplantation. Which targeted strategy is appropriate?

- A.** Gilteritinib without a FLT3 mutation
- B.** Use an IDH1 inhibitor such as ivosidenib or olutasidenib
- C.** Enasidenib, which targets mutant IDH2 rather than IDH1
- D.** Dasatinib without a BCR::ABL1 fusion
- E.** Venetoclax monotherapy as the IDH1-specific targeted agent

45. A patient with newly diagnosed metastatic hormone-sensitive prostate cancer has tumor testing that confirms PTEN deficiency and is starting abiraterone plus prednisone. Which 2026-approved targeted addition is an option in this biomarker-defined setting?

- A.** Darolutamide
- B.** Olaparib
- C.** Pembrolizumab
- D.** Capivasertib
- E.** Docetaxel

46. A patient with newly diagnosed high-grade serous ovarian cancer has a pathogenic BRCA1 mutation and responds to first-line platinum-based chemotherapy. Which maintenance strategy is particularly relevant?

- A.** Observation without maintenance
- B.** Bevacizumab maintenance
- C.** Continued platinum maintenance
- D.** PARP inhibitor maintenance
- E.** Checkpoint-inhibitor maintenance

47. A patient has ROS1-rearranged metastatic NSCLC with brain metastases. Which next-generation ROS1 tyrosine kinase inhibitor has strong CNS activity and was designed to retain activity against common ROS1 resistance mutations?

- A.** Crizotinib
- B.** Entrectinib
- C.** Lorlatinib
- D.** Ceritinib
- E.** Repotrectinib

48. A patient has a 4-cm, node-positive, HER2-positive breast cancer without distant metastases. What is the preferred general treatment sequence?

- A.** Proceed directly to surgery and reserve all HER2-directed therapy for metastatic recurrence
- B.** Give adjuvant endocrine therapy alone before surgery because HER2-directed therapy is unnecessary in node-positive disease
- C.** Use trastuzumab monotherapy preoperatively without cytotoxic chemotherapy or a second HER2-directed agent
- D.** Neoadjuvant chemotherapy with dual HER2 blockade followed by surgery and response-adapted adjuvant therapy
- E.** Perform surgery first and then give the same adjuvant regimen regardless of residual disease or pathologic response

49. A patient with metastatic colorectal cancer has a KRAS G12C mutation and has progressed after standard fluoropyrimidine-, oxaliplatin-, and irinotecan-based therapy. Which targeted strategy is appropriate?

- A.** A KRAS G12C inhibitor alone
- B.** KRAS G12C inhibitor plus EGFR blockade
- C.** Cetuximab monotherapy
- D.** Continue prior chemotherapy unchanged
- E.** BRAF inhibition plus EGFR blockade

50. A patient has metastatic BRAF V600E-mutant melanoma with rapidly progressive symptomatic disease requiring prompt tumor shrinkage. Which targeted therapy can produce a rapid response?

- A.** Pembrolizumab monotherapy
- B.** Single-agent BRAF inhibition
- C.** Nivolumab monotherapy
- D.** Combined BRAF and MEK inhibition
- E.** Ipilimumab monotherapy

51. A fit 63-year-old patient develops AML with myelodysplasia-related features after prior myelodysplastic syndrome and is a candidate for intensive induction. Which induction option is specifically designed for secondary/high-risk AML?

- A.** Standard 7+3 daunorubicin and cytarabine
- B.** Azacitidine plus venetoclax
- C.** High-dose cytarabine monotherapy
- D.** Immediate allogeneic transplantation
- E.** Liposomal daunorubicin and cytarabine (CPX-351)

52. A patient with known metastatic prostate cancer develops new severe thoracic back pain, leg weakness, and urinary retention. What is the most appropriate immediate diagnostic and therapeutic approach?

- A.** Begin physical therapy and reassess in one week
- B.** Use oral analgesics alone because neurologic deficits are usually irreversible
- C.** Order a plain radiograph and wait for the result before giving corticosteroids
- D.** Schedule an outpatient bone scan before starting treatment
- E.** Give corticosteroids and obtain urgent MRI of the spine while arranging definitive local therapy

53. A patient with bulky symptomatic recurrent metastatic head and neck squamous-cell carcinoma has no contraindication to checkpoint therapy and requires a higher probability of rapid response. Which first-line strategy is appropriate?

- A.** Pembrolizumab monotherapy
- B.** Cetuximab monotherapy
- C.** Platinum and fluorouracil without pembrolizumab
- D.** Pembrolizumab plus platinum-fluorouracil chemotherapy
- E.** Salvage surgery without systemic therapy

54. A first-in-human oncology study escalates drug dose in small cohorts while tracking dose-limiting toxicities during cycle 1. What is the principal objective of this phase of development?

- A.** Define a tolerable dose and characterize early safety
- B.** Validate a surrogate endpoint for regulatory use
- C.** Establish a population-wide cancer screening strategy
- D.** Compare two accepted regimens for noninferiority
- E.** Demonstrate an overall-survival advantage over standard care

55. A patient with metastatic castration-resistant prostate cancer has a pathogenic BRCA2 alteration and has progressed on an androgen-receptor pathway inhibitor. Which treatment class is particularly relevant?

- A. Taxane chemotherapy
- B. Radium-223
- C. Lutetium-177-PSMA therapy
- D. Checkpoint inhibition
- E. PARP inhibitor therapy

56. A patient with metastatic lung adenocarcinoma has a RET fusion and no prior systemic therapy. Which treatment best matches the driver alteration?

- A. Osimertinib
- B. Capmatinib
- C. Selpercatinib
- D. Sotorasib
- E. Alectinib

57. A patient with HER2-positive stage III breast cancer receives neoadjuvant taxane-based chemotherapy with trastuzumab and pertuzumab but has residual invasive disease at surgery. Under current 2026 practice, which adjuvant HER2-directed therapy is an approved escalation option?

- A. Continue trastuzumab plus pertuzumab
- B. Endocrine therapy alone
- C. Fam-trastuzumab deruxtecan
- D. Observation without further HER2 therapy
- E. Trastuzumab emtansine

58. A patient has HER2-positive, RAS-wild-type metastatic colorectal cancer that has progressed after standard chemotherapy. Which targeted regimen is an established option?

- A. Trastuzumab monotherapy
- B. Tucatinib plus trastuzumab
- C. Cetuximab monotherapy
- D. Continue prior chemotherapy unchanged
- E. Pembrolizumab monotherapy

59. A patient with newly diagnosed AML has a white blood cell count of 220,000/microliter, dyspnea, confusion, and retinal hemorrhages. Which complication is most likely?

- A. Tumor lysis syndrome
- B. Disseminated intravascular coagulation
- C. Sepsis
- D. Symptomatic leukostasis
- E. CNS leukemia

60. A patient with metastatic lung cancer has a recurrent symptomatic malignant pleural effusion. The lung re-expands after drainage, but the effusion returns within days. She prefers to minimize repeated hospital visits. Which strategy is most appropriate?

- A. Observation despite recurrent dyspnea
- B. Long-term systemic corticosteroids alone
- C. Placement of an indwelling pleural catheter
- D. Daily diagnostic thoracentesis indefinitely
- E. Routine prophylactic chest radiation

61. A patient with metastatic castration-resistant prostate cancer has PSMA-positive disease on appropriate imaging and has progressed after an androgen-receptor pathway inhibitor and taxane therapy. Which radioligand treatment is appropriate?

- A. Lutetium-177-PSMA-617

- B.** Repeat the prior androgen-receptor pathway inhibitor
- C.** Radium-223
- D.** Androgen-deprivation therapy alone
- E.** Sipuleucel-T

62. A patient has metastatic uveal melanoma and is HLA-A*02:01 positive. Which systemic therapy has demonstrated an overall-survival benefit in this biomarker-defined population?

- A.** Pembrolizumab
- B.** Nivolumab plus ipilimumab
- C.** Dacarbazine
- D.** BRAF-MEK inhibition
- E.** Tebentafusp

63. A patient with newly diagnosed HER2-positive metastatic breast cancer has not received prior anti-HER2 therapy for metastatic disease and has no contraindication to a taxane. Which induction regimen is a standard first-line backbone?

- A.** Trastuzumab monotherapy
- B.** Fam-trastuzumab deruxtecan
- C.** Tucatinib plus trastuzumab and capecitabine
- D.** Trastuzumab plus pertuzumab and a taxane
- E.** Endocrine therapy alone

64. A patient has initially unresectable liver-limited colorectal metastases that shrink substantially after systemic therapy, leaving all disease technically removable with adequate future liver remnant. What is the next best step?

- A.** Continue systemic chemotherapy indefinitely and avoid local therapy even though all visible liver disease has become resectable
- B.** Refer for multidisciplinary evaluation for curative-intent liver resection or ablation

- C.** Proceed to liver transplantation as the routine first curative strategy for resectable colorectal liver metastases
- D.** Stop treatment and observe because conversion to resectability does not alter prognosis or therapeutic intent
- E.** Treat the liver lesions with palliative whole-liver radiation rather than curative-intent resection or ablation

65. A patient with metastatic NSCLC has a MET exon 14 skipping alteration. Which therapy is specifically matched to this molecular finding?

- A.** Osimertinib
- B.** Sotorasib
- C.** Capmatinib or tepotinib
- D.** Selpercatinib
- E.** Pembrolizumab monotherapy chosen instead of driver-directed therapy

66. A patient with high-grade serous ovarian cancer relapses 18 months after completing platinum-based chemotherapy and previously had a good response. Which general treatment principle applies?

- A.** Use a non-platinum single agent because any recurrence after prior platinum is considered platinum resistant
- B.** Observe because a treatment-free interval longer than one year predicts no benefit from additional systemic therapy
- C.** Use PARP-inhibitor monotherapy as a substitute for response-inducing chemotherapy regardless of BRCA or HRD context
- D.** Use a platinum-containing combination because the disease remains platinum sensitive
- E.** Repeat the identical prior regimen indefinitely without considering a platinum combination or current maintenance strategy

67. A patient with bulky, highly chemosensitive lymphoma has a very high uric acid level, rising creatinine, hyperphosphatemia, and hypocalcemia before therapy. Which urate-lowering treatment produces the most rapid reduction in existing uric acid?

- A. Allopurinol
- B. Intravenous fluids alone
- C. Febuxostat
- D. Rasburicase
- E. Immediate dialysis

68. A patient has recurrent metastatic nasopharyngeal carcinoma and has not received systemic therapy for metastatic disease. Which first-line regimen is a modern standard?

- A. Gemcitabine plus cisplatin alone
- B. Pembrolizumab monotherapy
- C. Gemcitabine and cisplatin plus toripalimab
- D. Cetuximab plus platinum and fluorouracil
- E. Radiation therapy alone

69. A single-arm phase II study evaluates a new drug in a molecularly selected population with few established therapies. Which endpoint is most commonly used to determine whether there is sufficient antitumor activity to justify further study?

- A. Objective response rate assessed with prespecified criteria
- B. Difference in overall survival versus a concurrent randomized control
- C. Rate of germline pathogenic variants among enrolled patients
- D. Population cancer incidence over the next decade
- E. Five-year disease-specific mortality in the general population

70. A patient with metastatic ovarian cancer has tense symptomatic ascites causing early satiety and dyspnea. She has no evidence of bowel obstruction. Which intervention is most likely to provide rapid symptom relief?

- A. Empiric antibiotics

- B. Loop diuretics alone**
- C. Whole-abdomen radiation**
- D. Therapeutic paracentesis**
- E. Nasogastric decompression**

71. A patient with metastatic castration-resistant prostate cancer has symptomatic bone-predominant disease without visceral metastases. Which alpha-emitting bone-targeted radiopharmaceutical can improve survival and reduce skeletal morbidity?

- A. Radium-223**
- B. Lutetium-177-PSMA**
- C. Sipuleucel-T**
- D. Docetaxel**
- E. Abiraterone**

72. A patient with HER2-positive metastatic breast cancer progresses after first-line trastuzumab, pertuzumab, and a taxane. Which agent is a preferred second-line systemic therapy for most patients?

- A. Continue trastuzumab, pertuzumab, and the same taxane**
- B. Endocrine therapy alone**
- C. Fam-trastuzumab deruxtecan**
- D. Tucatinib, trastuzumab, and capecitabine**
- E. Stop all HER2-directed therapy**

73. A patient has locally advanced mid-rectal adenocarcinoma with threatened mesorectal fascia and regional nodes. Which treatment concept is preferred before definitive surgery?

- A. Total neoadjuvant therapy using systemic chemotherapy and pelvic chemoradiation or short-course radiation before surgery**
- B. Immediate surgery followed by adjuvant chemotherapy without preoperative pelvic therapy despite threatened mesorectal fascia**

C. Radiation alone without systemic chemotherapy before surgery for node-positive locally advanced rectal cancer

D. Systemic chemotherapy alone with omission of pelvic radiation in every patient with threatened mesorectal fascia

E. Observation until obstructive symptoms develop because preoperative treatment does not improve local disease control

74. A patient with metastatic lung adenocarcinoma has a BRAF V600E mutation. Which targeted combination is appropriate?

A. Single-agent vemurafenib without MEK inhibition

B. Sotorasib

C. Dabrafenib plus trametinib

D. Osimertinib

E. Pembrolizumab chosen instead of a BRAF-directed regimen despite a need for matched targeted therapy

75. A transfusion-dependent patient with lower-risk myelodysplastic syndrome has an isolated del(5q) abnormality and no excess blasts. Which therapy is particularly effective for anemia in this setting?

A. Lenalidomide

B. Erythropoietin

C. Luspatercept

D. Azacitidine

E. Venetoclax

76. A patient has metastatic Merkel-cell carcinoma and no contraindication to immune checkpoint blockade. Which therapy is preferred?

A. Platinum-etoposide

B. Checkpoint inhibition

- C. Radiation alone
- D. BRAF-MEK inhibition
- E. Observation

77. A patient develops persistent painful sensory peripheral neuropathy after taxane chemotherapy. The offending chemotherapy has been stopped. Which medication has the strongest evidence for reducing painful chemotherapy-induced peripheral neuropathy?

- A. Gabapentin
- B. Pregabalin
- C. Duloxetine
- D. Amitriptyline
- E. Topical lidocaine

78. A minimally symptomatic man with metastatic castration-resistant prostate cancer has good performance status, no visceral metastases, and has not received immunotherapy. Which autologous cellular immunotherapy is specifically designed for this clinical setting?

- A. Docetaxel
- B. Cabazitaxel
- C. Lutetium-177-PSMA-617
- D. Radium-223
- E. Sipuleucel-T

79. A patient with HER2-positive metastatic breast cancer has progressive active brain metastases after prior trastuzumab-based therapy. Which regimen has demonstrated substantial intracranial activity and survival benefit?

- A. Trastuzumab monotherapy
- B. Endocrine therapy alone
- C. Pertuzumab plus trastuzumab

- D. Stop HER2-directed systemic therapy
- E. Tucatinib, trastuzumab, and capecitabine

80. A patient with rectal cancer completes total neoadjuvant therapy and has a sustained clinical complete response on digital examination, endoscopy, and high-quality MRI. At an experienced center, which option may be discussed?

- A. Immediate total mesorectal excision
- B. No further surveillance
- C. Additional indefinite chemotherapy
- D. Watch-and-wait with intensive surveillance
- E. Repeat pelvic radiation therapy

81. A patient with higher-risk myelodysplastic syndrome has excess blasts, adverse cytogenetics, and symptomatic cytopenias. He is not yet able to proceed to allogeneic transplantation. Which disease-modifying therapy is standard?

- A. Observation with serial blood counts
- B. A hypomethylating agent such as azacitidine
- C. Erythropoiesis-stimulating therapy alone
- D. Lenalidomide monotherapy
- E. AML-style intensive induction chemotherapy

82. A patient with KRAS G12C-mutated metastatic NSCLC progresses after platinum-based chemotherapy and immunotherapy. Which targeted therapy is appropriate?

- A. Continue the same platinum-immunotherapy regimen despite progression
- B. Cetuximab monotherapy
- C. Dabrafenib plus trametinib without a BRAF V600E mutation
- D. Osimertinib without an EGFR sensitizing mutation

E. A KRAS G12C inhibitor such as adagrasib or sotorasib

83. A patient has metastatic secretory carcinoma of a salivary gland with an ETV6::NTRK3 fusion. Which targeted therapy is appropriate?

A. A TRK inhibitor such as larotrectinib

B. Trastuzumab

C. Dabrafenib plus trametinib

D. Platinum chemotherapy

E. Observation without targeted therapy

84. A randomized trial has substantial treatment crossover after progression. The primary analysis compares patients according to their original randomization, regardless of the therapy they eventually received. Which analytic principle is being used?

A. Case-control matching

B. Landmark analysis

C. Per-protocol analysis

D. Intention-to-treat analysis

E. As-treated analysis

85. A patient with advanced ovarian cancer is being considered for bevacizumab. Which history most specifically raises concern for gastrointestinal perforation with this drug?

A. Well-controlled hypertension on one medication

B. Recent bowel obstruction with tumor involving the intestinal serosa

C. Remote provoked deep-vein thrombosis with completed anticoagulation

D. Mild taxane-associated peripheral neuropathy

E. Diet-controlled type 2 diabetes mellitus

86. A postmenopausal patient has newly diagnosed HR-positive, HER2-negative metastatic breast cancer without visceral crisis and without an actionable resistance mutation known at baseline. Which first-line strategy is preferred?

- A.** Single-agent aromatase inhibitor
- B.** Immediate multiagent chemotherapy
- C.** Trastuzumab-based therapy
- D.** An aromatase inhibitor plus a CDK4/6 inhibitor
- E.** Ovarian suppression alone

87. A patient has localized anal squamous-cell carcinoma involving the anal canal without distant metastases. What is the standard curative treatment?

- A.** Definitive chemoradiation with a fluoropyrimidine and mitomycin
- B.** Abdominoperineal resection as routine first-line treatment before attempting definitive chemoradiation
- C.** Radiation alone without a radiosensitizing fluoropyrimidine and mitomycin
- D.** Systemic chemotherapy alone without definitive pelvic radiation for localized anal-canal squamous carcinoma
- E.** Observation after local biopsy because localized anal squamous carcinoma rarely requires definitive treatment

88. A patient with long-standing prostate adenocarcinoma develops rapidly progressive visceral metastases, low PSA relative to tumor burden, and a biopsy showing small-cell neuroendocrine morphology. How should this transformation influence therapy?

- A.** Continue the current androgen-receptor inhibitor
- B.** Platinum-based neuroendocrine chemotherapy
- C.** Lutetium-177-PSMA therapy
- D.** Abiraterone plus prednisone
- E.** Docetaxel alone

89. A long-term lymphoma survivor received a high cumulative anthracycline dose and mediastinal radiation in young adulthood. Which survivorship issue deserves particular long-term attention?

- A.** Exclusive risk of renal-cell carcinoma from anthracycline exposure
- B.** Cardiovascular disease including cardiomyopathy and coronary disease
- C.** Only acute infusion reactions to anthracyclines
- D.** Elimination of future metabolic risk because the cancer is cured
- E.** Transient alopecia without later health implications

90. A 45-year-old patient is diagnosed with chronic-phase CML with a BCR::ABL1 fusion and no accelerated-phase features. What is the central treatment strategy?

- A.** Hydroxyurea alone
- B.** Allogeneic stem-cell transplantation first
- C.** Interferon alfa
- D.** AML induction chemotherapy
- E.** Oral BCR::ABL1 tyrosine kinase inhibitor

91. A patient with metastatic NSCLC has an activating HER2 (ERBB2) mutation and progresses after initial systemic therapy. Which antibody-drug conjugate is an established targeted option?

- A.** Fam-trastuzumab deruxtecan
- B.** Trastuzumab monotherapy
- C.** Ado-trastuzumab emtansine
- D.** Platinum-pemetrexed chemotherapy without HER2-directed treatment
- E.** Osimertinib without an EGFR mutation

92. A patient has unresectable locally advanced cutaneous squamous-cell carcinoma that cannot be cured with radiation. Which systemic treatment is standard?

- A.** Cemiplimab (PD-1 inhibitor)

- B.** Cetuximab monotherapy
- C.** Platinum chemotherapy
- D.** BRAF-MEK inhibition
- E.** Observation

93. A patient with ER-positive, HER2-negative metastatic breast cancer progresses on an aromatase inhibitor and CDK4/6 inhibitor. Circulating tumor DNA shows an ESR1 mutation and there is no visceral crisis. Which endocrine therapy is specifically designed to address estrogen-receptor dependence in this setting?

- A.** Continue the same aromatase inhibitor
- B.** Alpelisib
- C.** Elacestrant
- D.** Trastuzumab
- E.** Capecitabine

94. A patient has untreated metastatic HER2-positive, mismatch-repair-proficient gastric adenocarcinoma with PD-L1 expression above the current treatment threshold. Which first-line regimen is appropriate?

- A.** Trastuzumab plus platinum-fluoropyrimidine chemotherapy and pembrolizumab
- B.** Trastuzumab plus chemotherapy without checkpoint blockade despite an eligible PD-L1-positive metastatic HER2-positive tumor
- C.** Pembrolizumab plus chemotherapy without HER2-directed therapy despite confirmed HER2-positive disease
- D.** Fam-trastuzumab deruxtecan as routine first-line therapy before a trastuzumab-based chemotherapy regimen
- E.** Ramucirumab plus paclitaxel as first-line treatment rather than a HER2-directed platinum-fluoropyrimidine regimen

95. A patient undergoes nephrectomy for clear-cell renal-cell carcinoma with high-risk pathologic features and no evidence of metastases. Which adjuvant systemic treatment is an established option?

- A.** Sunitinib
- B.** Nivolumab plus ipilimumab
- C.** Lenvatinib plus pembrolizumab
- D.** Pembrolizumab
- E.** Observation

96. A patient with CML develops resistance to prior TKIs, and sequencing identifies the BCR::ABL1 T315I mutation. Which ATP-competitive BCR::ABL1 tyrosine kinase inhibitor retains activity against T315I?

- A.** Ponatinib
- B.** Asciminib
- C.** Dasatinib
- D.** Nilotinib
- E.** Imatinib

97. A patient receiving pembrolizumab develops fatigue, hypotension, hyponatremia, and a low morning cortisol with an inappropriately low ACTH. After acute stabilization, what is the key long-term management principle?

- A.** Fludrocortisone alone
- B.** Glucocorticoid replacement for immune-mediated secondary adrenal insufficiency
- C.** Glucocorticoid plus routine fludrocortisone replacement for isolated secondary adrenal insufficiency
- D.** Stop glucocorticoids once blood pressure normalizes
- E.** Levothyroxine alone without adrenal hormone replacement

98. A patient undergoes total thyroidectomy for differentiated papillary thyroid cancer with substantial iodine-avid nodal and pulmonary metastatic disease. Which systemic radiopharmaceutical treatment is appropriate?

- A.** Iodine-131 radioiodine
- B.** External-beam radiation
- C.** Lenvatinib
- D.** Observation
- E.** Repeat neck surgery

99. A screening test detects a cancer several years earlier, but the time of death is unchanged compared with patients whose cancer is diagnosed after symptoms develop. Survival measured from diagnosis appears longer in the screened group. What bias best explains this finding?

- A.** Confounding by indication
- B.** Verification bias
- C.** Lead-time bias
- D.** Immortal-time bias
- E.** Recall bias

100. A patient with metastatic lung adenocarcinoma has an NTRK gene fusion without another dominant driver. Which therapy is appropriate?

- A.** Selpercatinib (RET inhibitor)
- B.** Capmatinib (MET inhibitor)
- C.** Osimertinib (EGFR inhibitor)
- D.** Larotrectinib or repotrectinib
- E.** Sotorasib (KRAS G12C inhibitor)

101. A patient with HR-positive, HER2-negative metastatic breast cancer progresses after an aromatase inhibitor plus a CDK4/6 inhibitor. Tumor testing identifies a PIK3CA mutation. Which targeted endocrine combination is appropriate if metabolic status permits?

- A. Elacestrant
- B. Alpelisib plus fulvestrant
- C. Continue the same AI plus CDK4/6 inhibitor
- D. Trastuzumab plus pertuzumab
- E. Cytotoxic chemotherapy

102. A patient has metastatic HER2-negative gastric adenocarcinoma with strong membranous CLDN18.2 expression and is starting first-line platinum-fluoropyrimidine chemotherapy. Which targeted antibody can be added?

- A. Trastuzumab
- B. Ramucirumab
- C. Bevacizumab
- D. Cetuximab
- E. Zolbetuximab

103. A patient has newly diagnosed FIGO stage III cervical squamous-cell carcinoma without distant metastases. Which curative-intent treatment is appropriate?

- A. Radical hysterectomy alone despite stage III locally advanced disease
- B. Pelvic radiation without brachytherapy or radiosensitizing cisplatin
- C. Definitive cisplatin-based pelvic chemoradiation with brachytherapy
- D. Systemic platinum-taxane chemotherapy alone without definitive pelvic radiation
- E. Neoadjuvant chemotherapy followed by surgery as the routine standard for all stage III disease

104. A fit patient has newly diagnosed metastatic clear-cell renal-cell carcinoma with intermediate-risk disease and no autoimmune contraindication. Which first-line regimen is a standard option?

- A. Nivolumab monotherapy
- B. High-dose interleukin-2
- C. Active surveillance
- D. Gemcitabine plus cisplatin
- E. Nivolumab plus ipilimumab

105. A 69-year-old patient has Rai stage 0 chronic lymphocytic leukemia discovered incidentally. He has no B symptoms, cytopenias, bulky nodes, or rapid lymphocyte doubling. What is the preferred approach?

- A. Immediate BTK-inhibitor therapy despite no indication to treat
- B. Venetoclax-obinutuzumab despite asymptomatic Rai stage 0 disease
- C. Chemoimmunotherapy because any clonal lymphocytosis requires treatment
- D. Rituximab monotherapy to prevent future progression
- E. Observation with periodic clinical and laboratory follow-up

106. A patient has locally advanced basal-cell carcinoma that is not amenable to curative surgery or radiation. Which targeted pathway can be inhibited?

- A. Topical imiquimod
- B. Conventional cytotoxic chemotherapy
- C. Observation alone
- D. Vismodegib or sonidegib
- E. BRAF plus MEK inhibition

107. A 29-year-old woman with newly diagnosed lymphoma will receive gonadotoxic chemotherapy in two weeks and desires future pregnancy. Which action should be taken now?

- A. Recommend pregnancy during chemotherapy to avoid treatment delay
- B. Urgently refer for fertility-preservation counseling before treatment begins

- C. Tell her that fertility preservation is contraindicated in all hematologic cancers
- D. Wait until chemotherapy is completed before discussing fertility
- E. Assume ovarian function will recover because she is younger than 30

108. A patient with metastatic squamous NSCLC has no actionable driver alteration, PD-L1 tumor proportion score of 80%, low disease burden, and no contraindication to immune checkpoint therapy. Which single-agent first-line option is reasonable?

- A. Carboplatin-paclitaxel
- B. Pembrolizumab plus chemotherapy
- C. Sotorasib
- D. Pembrolizumab monotherapy
- E. Observation

109. A patient with HR-positive, HER2-negative metastatic breast cancer has progression after endocrine therapy and a tumor alteration in AKT1. Which targeted combination is an appropriate option?

- A. Continue the same endocrine therapy
- B. Alpelisib-fulvestrant
- C. Trastuzumab
- D. Chemotherapy
- E. Capivasertib-fulvestrant

110. A patient has untreated metastatic HER2-negative gastric adenocarcinoma that is mismatch-repair proficient and has PD-L1 expression supporting immunotherapy. Which treatment concept is appropriate?

- A. Platinum-fluoropyrimidine chemotherapy alone despite PD-L1-supported checkpoint eligibility
- B. Platinum-fluoropyrimidine chemotherapy combined with a PD-1 inhibitor
- C. PD-1 inhibitor monotherapy as routine treatment for every pMMR gastric cancer

- D.** Trastuzumab plus chemotherapy despite HER2-negative testing
- E.** Ramucirumab plus paclitaxel as routine first-line treatment

111. A patient with metastatic clear-cell renal-cell carcinoma needs rapid disease control and has no contraindication to immunotherapy or antiangiogenic therapy. Which combination is an accepted first-line option?

- A.** Active surveillance
- B.** Pembrolizumab monotherapy
- C.** Nivolumab monotherapy
- D.** Pembrolizumab plus lenvatinib
- E.** Doxorubicin-based chemotherapy

112. A patient with CLL requiring treatment has a TP53 deletion and no contraindication to targeted therapy. Which general treatment principle is most appropriate?

- A.** Fludarabine, cyclophosphamide, and rituximab because TP53 disruption predicts durable chemoimmunotherapy responses
- B.** Bendamustine plus rituximab because cytogenetic risk does not affect first-line CLL treatment selection
- C.** Chlorambucil-based therapy as the preferred approach whenever a TP53 deletion is present
- D.** Use a targeted approach such as a BTK inhibitor or venetoclax-based therapy rather than conventional chemoimmunotherapy
- E.** Observation without therapy despite meeting accepted indications for treatment because targeted agents are reserved for relapse

113. A patient has progressive metastatic differentiated thyroid carcinoma that no longer takes up radioactive iodine and is not amenable to local therapy. Which systemic treatment is a standard first-line option?

- A.** Lenvatinib
- B.** Radioactive iodine

- C. Observation
- D. Doxorubicin
- E. TSH suppression alone

114. An observational study classifies patients as exposed to a maintenance therapy only if they survive long enough to receive it, then compares survival from the original diagnosis between exposed and unexposed groups. Which bias is the greatest concern?

- A. Spectrum bias
- B. Publication bias
- C. Observer-expectancy bias
- D. Immortal-time bias
- E. Lead-time bias

115. A premenopausal breast-cancer survivor develops treatment-induced premature menopause and will remain on endocrine therapy. Which long-term complication should be actively assessed and prevented?

- A. Guaranteed recovery of peak bone mass during aromatase inhibition
- B. Progressive hypercalcemia caused by estrogen deficiency
- C. Universal iron overload from ovarian suppression
- D. Elimination of cardiovascular risk after menopause
- E. Accelerated bone loss and osteoporotic fracture risk

116. A patient with metastatic nonsquamous NSCLC has no actionable driver alteration and PD-L1 expression of 15%. He needs prompt systemic disease control. Which first-line regimen is a standard option?

- A. Pembrolizumab monotherapy despite PD-L1 expression below the usual high-expression threshold
- B. Platinum-pemetrexed chemotherapy without checkpoint inhibition

- C. Osimertinib without an EGFR sensitizing mutation
- D. Sotorasib without a KRAS G12C mutation
- E. Pembrolizumab with platinum and pemetrexed

117. A patient has metastatic HR-positive breast cancer that is HER2-low by immunohistochemistry and progresses on endocrine-based therapy. Which antibody-drug conjugate is an established option in this biomarker-defined population?

- A. Ado-trastuzumab emtansine
- B. Trastuzumab plus pertuzumab
- C. Fam-trastuzumab deruxtecan
- D. Sacituzumab govitecan
- E. Continue the same endocrine therapy

118. A patient with metastatic gastric adenocarcinoma progresses after first-line platinum-fluoropyrimidine therapy and has adequate performance status. Which second-line regimen is a standard option?

- A. Repeat platinum-fluoropyrimidine chemotherapy
- B. Paclitaxel plus ramucirumab
- C. Trastuzumab monotherapy
- D. Pembrolizumab monotherapy
- E. Best supportive care alone

119. A patient with von Hippel-Lindau disease has multiple enlarging renal-cell carcinomas and CNS hemangioblastomas for which repeated local procedures would create substantial morbidity. Which oral targeted agent can be used in appropriate patients?

- A. Belzutifan
- B. Sunitinib
- C. Everolimus

D. Observation

E. Pembrolizumab

120. A patient with PD-L1-positive recurrent metastatic cervical squamous-cell carcinoma has not received systemic therapy for metastatic disease. Which first-line regimen is appropriate?

A. Pembrolizumab monotherapy as routine first-line treatment for all PD-L1-positive metastatic cervical cancer without chemotherapy

B. Platinum and paclitaxel alone while omitting checkpoint blockade despite PD-L1 positivity and no contraindication

C. Pembrolizumab plus platinum and paclitaxel, with bevacizumab when appropriate

D. Bevacizumab monotherapy without cytotoxic chemotherapy or checkpoint inhibition as the preferred first-line regimen

E. Concurrent pelvic chemoradiation alone as definitive treatment for widespread metastatic recurrence

121. A patient with CLL develops jaundice, anemia, elevated lactate dehydrogenase, low haptoglobin, and a positive direct antiglobulin test. What is the preferred initial treatment for the hematologic complication?

A. Rituximab monotherapy

B. Immediate splenectomy

C. Red-cell transfusion alone

D. CLL-directed chemotherapy first

E. Systemic corticosteroids

122. A fit patient has unresectable high-grade metastatic soft-tissue sarcoma without a subtype-specific targeted indication. Which single agent remains a standard first-line chemotherapy backbone?

A. Doxorubicin

B. Gemcitabine-docetaxel

C. Pazopanib

- D. Imatinib**
- E. Observation**

123. A patient has stage II triple-negative breast cancer and no contraindication to immunotherapy. Which treatment strategy is standard?

- A.** Perform surgery first and give adjuvant chemotherapy without pembrolizumab regardless of stage II triple-negative biology
- B.** Give pembrolizumab monotherapy before surgery without cytotoxic chemotherapy
- C.** Use endocrine therapy as neoadjuvant treatment because triple-negative tumors lack HER2 amplification
- D.** Neoadjuvant pembrolizumab with multiagent chemotherapy followed by surgery and completion of pembrolizumab
- E.** Give neoadjuvant platinum chemotherapy alone and stop systemic therapy after surgery irrespective of the immunotherapy plan

124. A patient with HER2-positive gastric cancer progresses after trastuzumab-containing therapy and still has adequate organ function. Which antibody-drug conjugate is an established later-line option?

- A.** Trastuzumab monotherapy
- B.** Ramucirumab-paclitaxel
- C.** Cetuximab monotherapy
- D.** Pembrolizumab monotherapy
- E.** Trastuzumab deruxtecan

125. A patient with metastatic squamous NSCLC has no targetable driver and PD-L1 expression of 5%. Which chemoimmunotherapy combination is appropriate?

- A.** Pembrolizumab monotherapy despite PD-L1 expression of only 5%
- B.** Carboplatin-paclitaxel without immunotherapy
- C.** Pembrolizumab with carboplatin-pemetrexed despite squamous histology

- D.** Osimertinib without an EGFR sensitizing mutation
- E.** Pembrolizumab with carboplatin and paclitaxel or nab-paclitaxel

126. A breast-cancer survivor has chronic arm lymphedema after axillary surgery. Which management approach is most appropriate?

- A.** Compression therapy, exercise, skin care, and trained lymphedema therapy
- B.** Indefinite prophylactic antibiotics without recurrent cellulitis
- C.** High-dose diuretics as definitive lymphedema treatment
- D.** Permanent avoidance of resistance exercise
- E.** Prolonged limb immobilization

127. A patient has unresectable anaplastic thyroid carcinoma with a BRAF V600E mutation. Which targeted regimen can produce rapid and clinically meaningful responses?

- A.** Lenvatinib monotherapy
- B.** Radioactive iodine
- C.** Dabrafenib plus trametinib
- D.** Observation while awaiting differentiation
- E.** Cytotoxic chemotherapy alone

128. A trial evaluates 20 secondary endpoints without adjustment for multiple comparisons. Several have P values just below 0.05 even though the primary endpoint is negative. What is the main statistical concern?

- A.** Inflation of the family-wise probability of a false-positive result
- B.** Violation of blinding caused by endpoint multiplicity
- C.** Guaranteed false-negative results for all secondary endpoints
- D.** Conversion of relative effects into absolute effects
- E.** Loss of randomization because the sample size is large

129. A patient with previously indolent CLL develops rapidly enlarging lymph nodes, fevers, drenching sweats, weight loss, and a markedly elevated LDH. PET/CT shows one intensely avid node. What is the best next diagnostic step?

- A.** Escalate CLL therapy without tissue confirmation of the rapidly growing node
- B.** Repeat peripheral-blood flow cytometry as the sole evaluation for transformation
- C.** Observe the rapidly enlarging node until cytopenias develop
- D.** Bone-marrow biopsy alone while leaving the intensely FDG-avid accessible node unsampled
- E.** Biopsy the most suspicious accessible lesion to evaluate for Richter transformation

130. A patient with metastatic RCC on pembrolizumab develops a creatinine rise to three times baseline with pyuria and no obstruction, infection, or alternative nephrotoxin. What is the most appropriate management concept?

- A.** Continue pembrolizumab unchanged and recheck creatinine after several more cycles
- B.** Start platinum chemotherapy because renal dysfunction indicates RCC progression
- C.** Hold pembrolizumab and treat clinically significant immune nephritis with corticosteroids
- D.** Give high-dose diuretics without evaluating immune-mediated nephritis
- E.** Permanently discontinue all anticancer therapy without treating the inflammatory toxicity

131. A patient with previously untreated metastatic triple-negative breast cancer has a PD-L1 combined positive score of 20 and no contraindication to checkpoint inhibition. Which first-line strategy is appropriate?

- A.** Pembrolizumab combined with an appropriate chemotherapy backbone
- B.** Single-agent pembrolizumab without chemotherapy as the routine first-line regimen for all PD-L1-positive metastatic TNBC
- C.** Trastuzumab plus pertuzumab because high PD-L1 expression predicts HER2-directed benefit
- D.** Endocrine therapy plus a CDK4/6 inhibitor despite triple-negative receptor status
- E.** Chemotherapy alone while withholding checkpoint blockade despite a high PD-L1 combined positive score and no contraindication

132. A patient has metastatic esophageal squamous-cell carcinoma with no contraindication to immune therapy. Which first-line principle is appropriate?

- A.** Platinum-fluoropyrimidine chemotherapy alone while omitting checkpoint blockade despite eligibility for a standard combined regimen
- B.** Pembrolizumab monotherapy as the mandatory first-line regimen for every metastatic esophageal squamous carcinoma
- C.** Trastuzumab plus chemotherapy without evidence of HER2 overexpression or amplification
- D.** Definitive esophagectomy without systemic therapy for widespread metastatic disease
- E.** Combine platinum-fluoropyrimidine chemotherapy with a PD-1 inhibitor in an evidence-based regimen

133. A patient with unresectable stage III NSCLC without an actionable EGFR driver completes definitive concurrent platinum-based chemoradiation without progression. Which therapy should generally be offered next if there is no contraindication?

- A.** Observation
- B.** Consolidation durvalumab
- C.** Platinum-etoposide maintenance
- D.** Pembrolizumab consolidation
- E.** Thoracic surgery

134. A disease-free colorectal-cancer survivor reports persistent fatigue after treatment. Examination and laboratory evaluation reveal no anemia, endocrine disorder, infection, or recurrence. Which intervention should be recommended?

- A.** Routine stimulant therapy before nonpharmacologic measures
- B.** Long-term systemic corticosteroids for nonspecific fatigue
- C.** Permanent restriction from structured physical activity
- D.** Continuous bed rest until fatigue fully resolves
- E.** A graded program of regular aerobic and resistance exercise

135. A patient with metastatic uterine leiomyosarcoma has progressed after anthracycline therapy and remains fit. Which cytotoxic regimen is a recognized option?

- A.** Repeat doxorubicin
- B.** Imatinib
- C.** Observation
- D.** Gemcitabine-docetaxel
- E.** Dabrafenib plus trametinib

136. A 62-year-old patient has newly diagnosed diffuse large B-cell lymphoma, stage III, with no major cardiac contraindication. Which regimen is a standard curative frontline backbone?

- A.** Rituximab monotherapy as definitive treatment for stage III diffuse large B-cell lymphoma
- B.** Rituximab plus anthracycline-based multiagent chemotherapy
- C.** Bendamustine plus rituximab as the standard curative frontline regimen for DLBCL
- D.** Observation until symptomatic progression despite newly diagnosed stage III aggressive lymphoma
- E.** ABVD because all CD20-positive lymphomas are treated like classical Hodgkin lymphoma

137. A patient has high-grade T1 non-muscle-invasive bladder cancer with carcinoma in situ after complete transurethral resection. What is the preferred bladder-preserving initial adjuvant therapy?

- A.** Intravesical BCG induction plus maintenance
- B.** Systemic pembrolizumab first
- C.** Observation after TURBT
- D.** Single-dose intravesical gemcitabine
- E.** No discussion of radical cystectomy

138. A patient with recurrent cervical cancer progresses after platinum-based chemotherapy and checkpoint inhibition. Which antibody-drug conjugate is an established treatment option?

- A. Trastuzumab emtansine
- B. Tisotumab vedotin
- C. Enfortumab vedotin
- D. Sacituzumab govitecan
- E. Repeat platinum-checkpoint therapy

139. A patient has HER2-negative metastatic breast cancer with a germline BRCA1 pathogenic variant and has received appropriate prior therapy. Which targeted drug class is particularly relevant?

- A. A PI3K inhibitor selected solely because germline BRCA1 is present
- B. HER2-directed therapy despite HER2-negative disease
- C. Continue prior therapy unchanged despite progression and a targetable germline BRCA alteration
- D. A PARP inhibitor such as olaparib or talazoparib
- E. A BRAF inhibitor selected solely because BRCA1 is mutated

140. A patient with resectable esophageal adenocarcinoma receives neoadjuvant chemoradiation followed by R0 esophagectomy but has residual viable tumor in the surgical specimen. Which adjuvant treatment improves disease-free survival?

- A. Observation
- B. Re-irradiation
- C. Nivolumab
- D. Trastuzumab
- E. Irinotecan

141. A fit patient has resectable stage IIIA NSCLC without an EGFR or ALK driver and no contraindication to immunotherapy. Which treatment concept reflects contemporary curative-intent management?

- A. Perioperative platinum chemotherapy plus an immune checkpoint inhibitor

- B.** Surgery alone with no perioperative systemic therapy discussion
- C.** Definitive chemoradiation despite clearly resectable disease and surgical candidacy
- D.** EGFR-targeted adjuvant therapy despite absence of an EGFR driver
- E.** Checkpoint-inhibitor monotherapy without platinum chemotherapy as the routine perioperative strategy

142. A patient has progressive metastatic medullary thyroid carcinoma with a RET M918T mutation. Which selective RET inhibitor is appropriate?

- A.** Vandetanib
- B.** Cabozantinib
- C.** Lenvatinib
- D.** Sorafenib
- E.** Selpercatinib

143. A randomized trial reports a survival benefit in the overall population. An exploratory subgroup analysis suggests a much larger benefit in patients younger than 65 years. Which result most directly tests whether treatment effect truly differs by age?

- A.** A significant P value within the younger subgroup alone
- B.** A prespecified treatment-by-age interaction test
- C.** A lower median age in the experimental arm
- D.** A larger sample size in the younger subgroup
- E.** A nonsignificant P value within the older subgroup alone

144. A patient with metastatic cancer asks, 'How long do I have?' The oncologist is uncertain but expects survival is more likely measured in months than years. Which response best reflects high-quality prognostic communication?

- A.** Avoid the question because uncertainty makes prognostic discussion harmful
- B.** Discuss only the median survival from a trial without exploring the patient's goals

- C. Give an exact date of death to demonstrate confidence
- D. Direct all prognostic questions to family members even though the patient has capacity
- E. Ask what the patient wants to know, give an honest range with uncertainty, and relate the estimate to planning

145. A patient with DLBCL has primary refractory disease after anthracycline-based frontline therapy and is otherwise fit. Which strategy is preferred over conventional salvage chemotherapy followed by autologous transplantation in many patients with disease refractory to or recurring within 12 months of frontline therapy?

- A. Salvage chemotherapy followed by autologous transplantation
- B. Repeat frontline anthracycline-based therapy
- C. Observation until symptomatic progression
- D. Single-agent rituximab
- E. Second-line CD19-directed CAR T-cell therapy

146. A patient has BCG-unresponsive carcinoma in situ of the bladder and is not willing or medically able to undergo radical cystectomy. Which bladder-preserving systemic option is available?

- A. Repeat BCG
- B. Observation
- C. Pembrolizumab
- D. Radical cystectomy
- E. Avelumab

147. A patient with germline BRCA1-mutated, HER2-negative, high-risk early breast cancer has completed local therapy and chemotherapy. Which additional systemic therapy can reduce recurrence risk?

- A. Adjuvant trastuzumab
- B. Observation alone

- C. Adjuvant alpelisib
- D. Indefinite platinum maintenance
- E. Adjuvant olaparib

148. A fit patient undergoes R0 resection of pancreatic ductal adenocarcinoma and has recovered sufficiently for multiagent chemotherapy. Which adjuvant regimen provides the greatest survival benefit for many fit patients?

- A. Observation alone
- B. Gemcitabine monotherapy
- C. Adjuvant radiation alone
- D. Modified FOLFIRINOX
- E. FOLFIRI

149. A patient with unresectable metastatic liposarcoma has progressed after anthracycline therapy. Which agent has demonstrated activity and an overall-survival benefit in this disease family?

- A. Trabectedin
- B. Pazopanib
- C. Dacarbazine
- D. Eribulin
- E. Ifosfamide

150. A patient has completely resected EGFR exon 19-deleted stage II lung adenocarcinoma and has completed indicated adjuvant chemotherapy. Which targeted therapy reduces recurrence risk?

- A. Adjuvant alectinib
- B. Observation alone
- C. Adjuvant pembrolizumab
- D. Adjuvant sotorasib

E. Adjuvant osimertinib

151. A patient has stage III follicular lymphoma with low tumor burden, normal blood counts, no threatened organ function, and no lymphoma-related symptoms. What is the most appropriate initial management?

- A. Immediate chemoimmunotherapy solely because the disease is stage III
- B. Active surveillance without immediate systemic therapy
- C. Rituximab maintenance without any induction therapy
- D. Allogeneic transplantation in first presentation despite low tumor burden and no symptoms
- E. Radiation to all nodal sites despite disseminated low-burden disease

152. After scans show progression on several lines of therapy, a patient says, 'So there is nothing more you can do for me.' Which response is most appropriate?

- A. Immediately list every experimental drug without addressing the statement
- B. Promise that another chemotherapy regimen will control the cancer
- C. End the visit because further discussion will increase distress
- D. Say that the patient is wrong and redirect to the next laboratory result
- E. Acknowledge the emotion, clarify that care will continue, and explore what outcomes matter most now

153. A fit patient has cT2 muscle-invasive bladder urothelial carcinoma and adequate kidney and hearing function for cisplatin. Which treatment sequence offers the best chance of cure?

- A. Radical cystectomy first followed by cisplatin only if pathologic nodes are found, foregoing established neoadjuvant benefit
- B. Neoadjuvant cisplatin-based combination chemotherapy followed by radical cystectomy
- C. Bladder-preserving radiation alone without concurrent radiosensitizing chemotherapy as the default for every fit cT2 patient
- D. Intravesical BCG because muscle-invasive urothelial cancer is managed initially like high-risk non-muscle-invasive disease

E. Neoadjuvant carboplatin substitution for cisplatin despite adequate kidney function and hearing

154. A patient undergoes breast-conserving surgery for ER-positive ductal carcinoma in situ and will receive radiation. Which systemic intervention can reduce ipsilateral and contralateral breast events?

A. No additional risk-reduction discussion because radiation eliminates future ipsilateral and contralateral breast-cancer risk

B. Adjuvant cytotoxic chemotherapy because ER-positive ductal carcinoma in situ behaves like invasive node-positive disease

C. Risk-reducing endocrine therapy such as tamoxifen or an aromatase inhibitor when appropriate

D. HER2-directed therapy for all ductal carcinoma in situ regardless of HER2 testing

E. Bilateral mastectomy is mandatory after breast-conserving surgery for ER-positive ductal carcinoma in situ

155. A patient with newly diagnosed metastatic pancreatic adenocarcinoma has excellent performance status and preserved organ function. Which first-line regimen is appropriate?

A. Single-agent gemcitabine is mandatory despite excellent performance status and suitability for intensive combination therapy

B. Pancreatic radiation alone as primary therapy for widespread metastatic adenocarcinoma

C. FOLFIRINOX or another evidence-based intensive multiagent pancreatic regimen

D. Observation until cancer-related symptoms develop because early systemic therapy does not affect metastatic pancreatic cancer

E. Adjuvant-style gemcitabine-capecitabine given with curative intent despite established metastatic disease

156. A patient has newly diagnosed stage IV endometrial carcinoma with mismatch-repair deficiency. Which frontline systemic strategy is preferred?

A. Carboplatin and paclitaxel combined with an immune checkpoint inhibitor, followed by checkpoint maintenance

B. Carboplatin and paclitaxel alone because mismatch-repair status has no role in first-line advanced endometrial treatment

- C. Single-agent pembrolizumab alone as the standard initial approach for every newly diagnosed stage IV dMMR presentation
- D. Hormonal therapy alone regardless of histology, grade, symptoms, or disease burden
- E. Pelvic radiation alone as systemic treatment for disseminated stage IV disease

157. A fit 57-year-old patient undergoes maximal safe resection of newly diagnosed glioblastoma. Which adjuvant treatment is standard?

- A. Radiation therapy alone without temozolomide in a fit patient
- B. Temozolomide alone without radiation after maximal safe resection
- C. PCV chemotherapy without radiation as the standard glioblastoma regimen
- D. Radiation with concurrent and adjuvant temozolomide
- E. High-dose methotrexate as the standard adjuvant regimen for glioblastoma

158. An adjuvant trial shows a large improvement in disease-free survival but overall-survival data remain immature. Which statement about disease-free survival is most appropriate?

- A. It always predicts the same magnitude of overall-survival benefit
- B. It is equivalent to quality-adjusted survival
- C. It is invalid unless every recurrence is biopsy proven
- D. Its surrogacy for overall survival is disease- and treatment-dependent
- E. It eliminates the need to assess treatment toxicity

159. A medically inoperable patient has a peripheral 2-cm stage I NSCLC with no nodal involvement on staging. Which local treatment offers high rates of durable control?

- A. Stereotactic body radiation therapy
- B. Observation with serial imaging alone
- C. Conventionally fractionated thoracic radiation
- D. Systemic chemotherapy without local treatment

E. Percutaneous thermal ablation as routine first choice

160. A lymph-node biopsy shows small-to-medium lymphoid cells expressing CD20, CD5, and cyclin D1, with a t(11;14) translocation. Which diagnosis is most likely?

A. Chronic lymphocytic leukemia

B. Follicular lymphoma

C. Diffuse large B-cell lymphoma

D. Classical Hodgkin lymphoma

E. Mantle cell lymphoma

161. A healthy premenopausal woman is found to have classic lobular carcinoma in situ on concordant biopsy and has no invasive cancer. Which counseling point is most appropriate?

A. Treat classic LCIS as invasive breast cancer with routine axillary staging and adjuvant chemotherapy

B. Perform mandatory bilateral mastectomy because classic LCIS invariably progresses to invasive cancer

C. Provide no additional surveillance because LCIS affects only the biopsied breast and does not alter contralateral risk

D. LCIS is a marker of increased bilateral breast-cancer risk, and enhanced surveillance plus risk-reducing endocrine therapy can be discussed

E. Use radiation to the involved breast as the standard definitive therapy for concordant classic LCIS

162. A patient with metastatic pancreatic cancer has a germline BRCA2 pathogenic variant and achieves prolonged disease control on platinum-based chemotherapy. Which maintenance strategy can be considered?

A. Continue full-dose platinum indefinitely

B. Pembrolizumab maintenance

C. Trastuzumab maintenance

- D.** Stop all anticancer therapy
- E.** Olaparib maintenance

163. A patient has newly diagnosed metastatic urothelial carcinoma and is eligible for antibody-drug conjugate plus immunotherapy. Which first-line regimen is now a preferred standard?

- A.** Platinum plus gemcitabine
- B.** Enfortumab vedotin plus pembrolizumab
- C.** Avelumab before induction therapy
- D.** Pembrolizumab monotherapy
- E.** Radical cystectomy alone

164. A patient with decision-making capacity has advanced cancer and clearly refuses cardiopulmonary resuscitation after an informed discussion. His adult children insist that 'everything be done.' What should the oncology team do?

- A.** Ignore the patient's decision unless a court order is obtained
- B.** Follow the children's request because family automatically has priority
- C.** Require the patient to designate one child before the preference is valid
- D.** Provide resuscitation because do-not-resuscitate orders are incompatible with cancer therapy
- E.** Honor the patient's informed preference and document the resuscitation plan

165. A teenager has localized high-grade conventional osteosarcoma of the distal femur without metastases. Which treatment is standard?

- A.** Surgery alone without perioperative chemotherapy
- B.** MAP chemotherapy plus complete surgical resection
- C.** Radiation alone because osteosarcoma is highly radiosensitive
- D.** Vincristine-doxorubicin-cyclophosphamide with ifosfamide-etoposide, the Ewing sarcoma backbone

E. Doxorubicin alone without high-dose methotrexate or cisplatin

166. A patient with classical Hodgkin lymphoma receives ABVD and develops new cough, hypoxemia, and bilateral interstitial infiltrates without infection. Which drug should be stopped because of suspected treatment-related pulmonary toxicity?

A. Bleomycin

B. Doxorubicin

C. Vinblastine

D. Dacarbazine

E. Continue ABVD unchanged

167. A patient is newly diagnosed with extensive-stage small-cell lung cancer and has good performance status. Which first-line systemic therapy is standard?

A. Platinum-etoposide + PD-L1 inhibitor

B. Platinum-etoposide alone

C. Pembrolizumab monotherapy

D. Thoracic chemoradiation

E. Surgery plus chemotherapy

168. A patient has inflammatory breast cancer with diffuse erythema and peau d'orange involving most of the breast and biopsy-proven invasive carcinoma without distant metastases. What is the standard treatment concept?

A. Breast-conserving surgery first followed by endocrine therapy alone because inflammatory presentation does not affect local management

B. Immediate mastectomy without neoadjuvant systemic therapy, followed by observation if margins are negative

C. Neoadjuvant systemic therapy followed by lumpectomy and omission of regional radiation if there is clinical response

D. Neoadjuvant systemic therapy followed by modified radical mastectomy and postmastectomy radiation

E. Definitive radiation alone without systemic therapy or surgery in an operable nonmetastatic patient

169. A patient with metastatic pancreatic adenocarcinoma is found to have mismatch-repair deficiency and high microsatellite instability. Which treatment becomes a particularly important option?

A. FOLFIRINOX

B. Pembrolizumab

C. Trastuzumab

D. Olaparib

E. Cetuximab

170. A patient with metastatic urothelial carcinoma has an activating FGFR3 alteration and progresses after prior systemic therapy. Which targeted drug is appropriate?

A. Enfortumab

B. Erdafitinib

C. Sacituzumab

D. Pembrolizumab

E. Continue prior therapy

171. A patient with metastatic cancer has progressive functional decline, no remaining disease-directed therapy likely to provide meaningful benefit, and an estimated prognosis of a few months. She wants to remain at home and avoid hospitalization. Which service best aligns with these goals?

A. Routine ICU admission for any symptom change

B. Intensive surveillance imaging every two weeks

C. Mandatory inpatient chemotherapy until the final days of life

D. Withdrawal of all symptom-directed medications

E. Hospice care focused on comfort and support in the preferred setting

172. An older patient with glioblastoma has a tumor with MGMT promoter methylation. What does this biomarker generally predict?

A. Less likelihood of temozolomide benefit because promoter methylation increases MGMT-mediated repair of alkylator damage

B. Greater likelihood of benefit from temozolomide because DNA repair of alkylator damage is reduced

C. Prediction of benefit from EGFR inhibitors because MGMT methylation is a surrogate for EGFR amplification

D. Evidence that the tumor is IDH-mutant because MGMT promoter methylation is equivalent to an IDH mutation

E. A marker that has no relationship to alkylating-agent sensitivity in glioblastoma

173. In a randomized metastatic-cancer trial, patients assigned to the control arm are allowed to receive the experimental drug at progression. Which effect on the intention-to-treat overall-survival comparison is most likely?

A. Crossover converts the study into a case-control design

B. Crossover can reduce the apparent overall-survival difference between randomized groups

C. Crossover necessarily exaggerates the experimental arm's overall-survival benefit

D. Crossover guarantees identical toxicity between groups

E. Crossover invalidates all progression-free-survival measurements

174. A patient has a clonal bone-marrow plasma-cell population of 15%, an involved-to-uninvolved serum free-light-chain ratio of 110 with the involved light chain above the diagnostic threshold, no anemia, renal failure, hypercalcemia, or bone lesions. How should this be classified?

A. Active multiple myeloma because a myeloma-defining biomarker is present

B. Smoldering multiple myeloma because there is no hypercalcemia, renal failure, anemia, or bone lesion

- C. Monoclonal gammopathy of undetermined significance because marrow plasma cells remain below 20%
- D. Solitary plasmacytoma because the marrow plasma-cell percentage is below the threshold for overt myeloma
- E. Continue observation until a CRAB feature appears because biomarker-defined myeloma does not warrant treatment

175. An endometrial carcinoma has loss of MLH1 and PMS2 by immunohistochemistry. Which next tumor test helps distinguish sporadic MLH1 silencing from possible Lynch syndrome?

- A. MLH1 promoter methylation testing
- B. Immediate germline MLH1 sequencing
- C. HER2 amplification testing
- D. Repeat mismatch-repair immunohistochemistry only
- E. BRCA1/2 germline testing

176. A patient with limited-stage small-cell lung cancer completes concurrent platinum-etoposide chemoradiation without progression. Which consolidation strategy has become an evidence-based option?

- A. Observation
- B. Durvalumab consolidation
- C. Prophylactic cranial irradiation only
- D. Pembrolizumab consolidation
- E. Platinum-etoposide maintenance

177. A man with resected ER-positive breast cancer has no contraindication to endocrine therapy. Which adjuvant endocrine treatment is generally preferred?

- A. Adjuvant tamoxifen
- B. Aromatase inhibitor alone

- C. Fulvestrant
- D. No endocrine therapy
- E. Trastuzumab

178. A patient has unresectable biliary tract cancer and preserved liver function. Which first-line regimen is a current standard?

- A. Gemcitabine plus cisplatin alone
- B. FOLFOX chemotherapy
- C. Pembrolizumab monotherapy
- D. Gemcitabine-cisplatin-durvalumab
- E. Radiation therapy alone

179. A young adult has localized Ewing sarcoma of the pelvis. Which chemotherapy backbone is standard in North American practice?

- A. Doxorubicin alone without interval-compressed multiagent therapy as the standard curative regimen
- B. Methotrexate, doxorubicin, and cisplatin, the classic osteosarcoma backbone rather than an Ewing sarcoma regimen
- C. Surgery alone because localized Ewing sarcoma does not require systemic chemotherapy
- D. Alternating vincristine-doxorubicin-cyclophosphamide with ifosfamide-etoposide
- E. Radiation alone because Ewing sarcoma is radiosensitive enough to omit systemic therapy

180. A patient with metastatic urothelial carcinoma receives platinum-based chemotherapy and has stable disease but did not receive first-line enfortumab-pembrolizumab. Which maintenance therapy improves survival?

- A. Avelumab maintenance
- B. Observation without maintenance
- C. Continue platinum indefinitely

D. Intravesical BCG

E. Adjuvant nivolumab

181. A dying patient has otherwise refractory agitated delirium causing severe suffering despite correction of reversible contributors and expert palliative measures. The patient and surrogate understand the goals of care. Which intervention may be ethically appropriate?

A. Use a paralytic without sedative medication

B. Proportionate palliative sedation for refractory suffering

C. Withhold all analgesia to preserve consciousness

D. Administer treatment with the primary intent of causing death

E. Escalate chemotherapy despite no anticancer indication

182. A fit 58-year-old patient has newly diagnosed transplant-eligible multiple myeloma with no major contraindication to standard agents. Which induction approach best reflects contemporary practice?

A. A daratumumab-containing quadruplet such as daratumumab, bortezomib, lenalidomide, and dexamethasone

B. Bortezomib, lenalidomide, and dexamethasone without an anti-CD38 antibody as the preferred modern induction for every transplant-eligible patient

C. Melphalan and prednisone as induction before stem-cell collection in a fit transplant candidate

D. Lenalidomide and dexamethasone alone followed by immediate maintenance without stem-cell collection

E. High-dose melphalan with autologous transplant as the first treatment before any induction therapy

183. A woman at 18 weeks of pregnancy is diagnosed with node-positive breast cancer for which chemotherapy should not be delayed until after delivery. Which treatment principle is correct?

A. Methotrexate-based chemotherapy during pregnancy because folate antagonists are safe after the first trimester

B. Delay all indicated chemotherapy until after delivery regardless of maternal cancer risk

- C. Trastuzumab during pregnancy because monoclonal antibodies do not cross the placenta
- D. Anthracycline-based chemotherapy can be given in the second or third trimester
- E. Endocrine therapy during pregnancy as the preferred substitute for chemotherapy

184. A patient with intrahepatic cholangiocarcinoma progresses after first-line therapy. Tumor sequencing shows an FGFR2 fusion. Which targeted therapy is appropriate?

- A. An FGFR inhibitor such as futibatinib or pemigatinib
- B. Ivosidenib despite an FGFR2 fusion and no documented IDH1 mutation
- C. Continue first-line chemotherapy unchanged despite progression and an actionable FGFR2 fusion
- D. Cetuximab because FGFR2 fusion predicts EGFR pathway dependence
- E. Trastuzumab because all receptor tyrosine-kinase fusions in cholangiocarcinoma are treated with HER2 blockade

185. A fit patient has unresectable pleural mesothelioma with biphasic histology and no major autoimmune contraindication. Which first-line systemic option is particularly appropriate?

- A. Nivolumab plus ipilimumab
- B. Pembrolizumab monotherapy
- C. Carboplatin-paclitaxel
- D. Surgery alone
- E. Observation alone

186. A patient has high-grade upper-tract urothelial carcinoma that appears resectable and is cisplatin eligible. Why is neoadjuvant cisplatin-based chemotherapy often favored when systemic treatment is planned?

- A. Nephroureterectomy reliably improves kidney function and therefore increases later cisplatin eligibility
- B. Cisplatin has no perioperative role in upper-tract urothelial carcinoma, so renal function timing is irrelevant

- C. Carboplatin is therapeutically equivalent to cisplatin in the neoadjuvant setting and can always replace it after surgery
- D. Renal function may decline after nephroureterectomy and eliminate later cisplatin eligibility
- E. Upper-tract tumors do not respond to platinum chemotherapy, so all systemic therapy should be deferred until metastatic recurrence

187. A young adult has a completely resected grade 2 IDH-mutant diffuse glioma but has clinical features that place the patient at risk for progression and wishes to delay radiation and chemotherapy if possible. Which oral targeted drug is an option in an appropriate patient?

- A. Temozolomide
- B. Ivosidenib
- C. Vorasidenib
- D. Radiation plus PCV
- E. Observation

188. A patient with metastatic cancer is invited to join a therapeutic trial. He accurately explains the study purpose, alternatives, major risks, potential benefits, and that participation is voluntary. He then makes a consistent choice. Which ethical requirement is most directly demonstrated?

- A. Therapeutic privilege to withhold unfavorable information
- B. Decision-making capacity for the treatment decision
- C. Substitution of family preference for the patient's choice
- D. Automatic eligibility for any investigational treatment
- E. Waiver of informed consent because the disease is serious

189. A patient with metastatic gastric cancer develops a symptomatic proximal lower-extremity deep venous thrombosis. Platelet count and renal function are adequate, there is no active gastrointestinal bleeding, and no imminent procedure is planned. What is the preferred general management?

- A. Aspirin monotherapy as definitive anticoagulation
- B. Therapeutic anticoagulation with an appropriate cancer-associated thrombosis regimen

- C. Prophylactic-dose anticoagulation only despite a confirmed proximal thrombosis
- D. Inferior vena cava filter placement instead of anticoagulation in every case
- E. Observation alone because thrombosis is expected with cancer

190. A patient with standard-risk multiple myeloma undergoes autologous stem-cell transplantation and achieves a deep response. Which maintenance therapy is standard for many such patients?

- A. Observation without maintenance
- B. High-dose dexamethasone maintenance
- C. Allogeneic transplantation
- D. Lenalidomide maintenance
- E. Multiagent cytotoxic maintenance

191. A patient has a progressing, symptomatic desmoid tumor causing pain and functional impairment after an initial period of observation. Which oral targeted therapy is an approved option?

- A. Imatinib
- B. Doxorubicin
- C. Observation
- D. Nirogacestat
- E. Radiation therapy

192. A patient with metastatic breast cancer has multiple painful osteolytic bone metastases and normal renal function. In addition to systemic anticancer therapy, which medication can reduce skeletal-related events?

- A. Calcium and vitamin D alone
- B. Teriparatide
- C. Zoledronic acid or denosumab
- D. Calcitonin

E. No bone-directed therapy

193. A patient with previously treated intrahepatic cholangiocarcinoma has an IDH1 R132 mutation. Which targeted drug is appropriate?

A. Futibatinib

B. FOLFOX

C. Trastuzumab

D. Dabrafenib-trametinib

E. Ivosidenib

194. A retired shipyard worker with a long history of asbestos exposure develops unilateral pleural thickening and recurrent hemorrhagic pleural effusion. Which malignancy is most strongly associated with this exposure pattern?

A. Pulmonary adenocarcinoma

B. Small-cell lung carcinoma

C. Malignant pleural mesothelioma

D. Thymoma

E. Metastatic renal-cell carcinoma to the pleura

195. A patient has stage III uterine serous carcinoma with HER2 overexpression. Which targeted agent can be added to carboplatin-paclitaxel?

A. Bevacizumab

B. Trastuzumab

C. Olaparib

D. Pembrolizumab

E. Cetuximab

196. A patient undergoes orchiectomy for stage I seminoma, has normalized markers, and has no radiographic evidence of metastasis. He is reliable for follow-up. What is a preferred postorchiectomy strategy?

- A.** Adjuvant carboplatin
- B.** Retroperitoneal lymph-node dissection
- C.** Adjuvant radiation
- D.** High-dose chemotherapy
- E.** Active surveillance

197. A patient with multiple myeloma has progressed after several lines including an immunomodulatory drug, proteasome inhibitor, and anti-CD38 antibody. He remains fit with adequate organ function. Which modern strategy directly targets B-cell maturation antigen?

- A.** CD19-directed CAR T-cell therapy
- B.** BTK-inhibitor therapy
- C.** BCL2-inhibitor therapy
- D.** CD20-bispecific antibody therapy
- E.** BCMA-directed CAR T or bispecific therapy

198. A patient is beginning a chemotherapy regimen with an expected febrile-neutropenia risk above 20% and has no contraindication to growth-factor support. What is the most appropriate prevention strategy?

- A.** Daily erythropoietin regardless of hemoglobin level
- B.** Long-term high-dose corticosteroids to stimulate neutrophils
- C.** Primary prophylaxis with granulocyte colony-stimulating factor
- D.** No prophylaxis unless neutropenic sepsis has already occurred
- E.** Routine prophylactic platelet transfusions before every cycle

199. A patient receiving trastuzumab for HER2-positive breast cancer develops an asymptomatic clinically meaningful decline in left-ventricular ejection fraction. What is the most appropriate next step?

- A.** Continue trastuzumab unchanged despite a clinically meaningful left-ventricular ejection-fraction decline and defer cardiac evaluation
- B.** Permanently discontinue all HER2-directed therapy after any asymptomatic ejection-fraction decline without reassessment
- C.** Switch automatically to anthracycline chemotherapy because it is less cardiotoxic than trastuzumab
- D.** Hold HER2-directed therapy temporarily, evaluate cardiac function, and initiate guideline-directed cardioprotective management as indicated
- E.** Treat the ejection-fraction decline with diuretics alone and continue HER2 therapy without guideline-directed cardioprotective management

200. A patient has unresectable hepatocellular carcinoma, Child-Pugh A liver function, and no contraindication to immunotherapy. He is being considered for atezolizumab plus bevacizumab. What should be addressed before treatment?

- A.** Start atezolizumab plus bevacizumab without assessing bleeding risk because portal hypertension does not alter bevacizumab safety
- B.** Evaluate and manage clinically significant esophageal or gastric varices because bevacizumab increases bleeding risk
- C.** Avoid all systemic therapy whenever cirrhosis is present despite Child-Pugh A function
- D.** Use prophylactic anticoagulation to offset bevacizumab-associated variceal bleeding risk
- E.** Perform routine liver biopsy solely to decide whether varices require treatment before bevacizumab

201. A patient has an anterior mediastinal mass and fluctuating ptosis and diplopia that worsen late in the day. Which associated malignancy should be suspected?

- A.** Germ-cell tumor with Lambert-Eaton syndrome
- B.** Lymphoma with peripheral neuropathy

- C. Thymoma with myasthenia gravis
- D. Thyroid carcinoma with Horner syndrome
- E. Teratoma with SIADH

202. A patient has a resected WHO grade 3 oligodendroglioma with an IDH mutation and 1p/19q codeletion. Which adjuvant treatment has long-term survival benefit?

- A. Temozolomide monotherapy
- B. Radiation plus PCV chemotherapy
- C. Observation alone
- D. Radiation therapy alone
- E. High-dose methotrexate

203. Tumor-only sequencing identifies a pathogenic BRCA2 variant at an allele fraction that raises concern for a possible germline finding. The result could affect the patient's relatives as well as treatment. What is the most appropriate next step?

- A. Remove the result from the medical record to protect confidentiality
- B. Assume the variant is germline and test relatives immediately
- C. Start population screening of all relatives without counseling
- D. Ignore the result because tumor testing can never suggest inherited risk
- E. Offer genetic counseling and confirmatory germline testing with an appropriate specimen

204. A young man has poor-risk metastatic nonseminomatous germ-cell tumor and normal renal and pulmonary function. Which curative-intent chemotherapy regimen is standard?

- A. Carboplatin plus etoposide
- B. Single-agent cisplatin
- C. One cycle of VIP
- D. Radiation therapy to metastatic sites

E. BEP: bleomycin, etoposide, and cisplatin

205. A patient has unresectable dermatofibrosarcoma protuberans with a COL1A1::PDGFB fusion. Which targeted therapy is appropriate?

A. Vemurafenib

B. Doxorubicin

C. Observation

D. Imatinib

E. Trastuzumab

206. A 71-year-old patient with polycythemia vera has a prior arterial thrombosis. Which strategy is appropriate to reduce recurrent thrombotic risk?

A. Phlebotomy alone without antiplatelet or cytoreductive therapy despite prior thrombosis

B. Phlebotomy, low-dose aspirin, and cytoreductive therapy

C. Low-dose aspirin alone without hematocrit control

D. Observation because thrombosis risk is determined only by the current hematocrit

E. Routine therapeutic anticoagulation without another indication as the sole thrombosis-prevention strategy

207. A patient with metastatic ER-positive breast cancer has rapid progression with rising bilirubin from extensive liver replacement, worsening coagulopathy, and impending organ failure. What feature most strongly changes the usual preference for endocrine-based therapy?

A. The presence of bone-only metastases

B. A long disease-free interval before recurrence

C. Low-volume asymptomatic metastatic disease

D. Strong estrogen-receptor expression in the tumor

E. Visceral crisis with impending organ failure

208. A patient with unresectable hepatocellular carcinoma has preserved liver function but a contraindication to bevacizumab because of recent major gastrointestinal bleeding. Which immunotherapy regimen is an alternative first-line option?

- A.** Atezolizumab plus bevacizumab
- B.** Sorafenib only
- C.** Tremelimumab plus durvalumab
- D.** Observation
- E.** Gemcitabine plus cisplatin

209. A patient will receive a highly emetogenic cisplatin-containing regimen. Which antiemetic strategy is most appropriate for acute prevention?

- A.** Metoclopramide alone after nausea develops
- B.** Dexamethasone alone before chemotherapy
- C.** NK1 and 5-HT3 antagonists, dexamethasone, and olanzapine
- D.** No prophylaxis unless vomiting occurs in cycle 1
- E.** A 5-HT3 antagonist alone

210. A patient with a newly discovered right hilar mass has facial swelling and venous distention consistent with superior vena cava syndrome. He is hemodynamically stable, has no airway compromise, and no tissue diagnosis. What is the best next principle?

- A.** Begin emergent thoracic radiation before establishing a diagnosis in every stable patient
- B.** Start empiric chemotherapy for presumed small-cell lung cancer before tissue diagnosis
- C.** Place a venous stent as mandatory first treatment despite no airway or hemodynamic compromise and no diagnosis
- D.** Observe without obtaining tissue because superior vena cava syndrome establishes the cancer histology
- E.** Obtain a prompt tissue diagnosis before definitive therapy when clinically safe

211. A testicular mass is accompanied by a clearly elevated alpha-fetoprotein level. Even if the orchiectomy specimen contains seminoma morphology, how should the tumor be managed?

- A.** Nonseminomatous germ-cell tumor
- B.** As pure seminoma
- C.** As a benign testicular lesion
- D.** With radiation alone
- E.** With surveillance only

212. A patient has low-risk gestational trophoblastic neoplasia with a low WHO prognostic score and no evidence of brain or liver metastases. Which therapy is appropriate?

- A.** Methotrexate or actinomycin D
- B.** EMA-CO
- C.** Immediate hysterectomy
- D.** Observation without therapy
- E.** Pelvic radiation therapy

213. A patient with essential thrombocythemia has a platelet count of 1.8 million/microliter and develops mucosal bleeding despite extreme thrombocytosis. Which acquired hemostatic abnormality should be considered?

- A.** Immune thrombocytopenia
- B.** Disseminated intravascular coagulation
- C.** Factor VIII inhibitor
- D.** Acquired von Willebrand syndrome
- E.** Heparin-induced thrombocytopenia

214. A woman with no personal cancer history has a pathogenic germline BRCA1 variant. Which cancer-risk pattern is most characteristic?

- A.** Markedly increased colorectal and endometrial cancer risk with no major breast or ovarian risk
- B.** Increased medullary thyroid and pheochromocytoma risk as the dominant syndrome
- C.** Increased sarcoma and adrenocortical cancer risk without major breast or ovarian risk
- D.** Average-population breast and ovarian risk because BRCA1 affects treatment but not inherited risk
- E.** High breast and ovarian cancer risk with enhanced screening and risk-reducing surgery discussion

215. A patient with cirrhosis has a single 3-cm hepatocellular carcinoma, no vascular invasion or metastases, and preserved performance status. Which statement about liver transplantation is correct?

- A.** The tumor exceeds Milan criteria because any HCC larger than 2 cm excludes transplantation
- B.** Liver transplantation treats cirrhosis but not hepatocellular carcinoma
- C.** Only patients with extrahepatic metastases are eligible for transplantation
- D.** The tumor is within Milan criteria and transplantation can treat both HCC and cirrhosis
- E.** Transplantation is never considered when the patient has preserved performance status

216. A patient receiving an immune checkpoint inhibitor develops six watery stools daily above baseline with abdominal cramping. Stool testing for infectious pathogens is negative. What is the most likely diagnosis?

- A.** Functional diarrhea
- B.** Immune-mediated colitis
- C.** Pancreatic insufficiency
- D.** Opioid-related overflow diarrhea
- E.** Oral mucositis

217. A patient has newly diagnosed primary CNS diffuse large B-cell lymphoma confined to the brain and eyes. Which drug is central to induction therapy?

- A.** CHOP

- B.** Whole-brain radiation alone
- C.** Temozolomide alone
- D.** Intrathecal methotrexate alone
- E.** High-dose methotrexate

218. A randomized prevention trial is stopped early after a scheduled interim analysis shows overwhelming benefit that crosses a prespecified efficacy boundary. Why is use of a prespecified stopping boundary important?

- A.** It limits inflation of type I error from repeated looks at accumulating data
- B.** It makes informed consent unnecessary after enrollment
- C.** It guarantees the final effect estimate is unbiased upward
- D.** It ensures every participant receives the superior treatment from enrollment
- E.** It removes the need for independent safety monitoring

219. A patient with a central lung mass has profound hyponatremia, low serum osmolality, inappropriately concentrated urine, and clinical euvolemia. Which histology is classically associated with this paraneoplastic syndrome?

- A.** Small-cell lung carcinoma
- B.** Lung adenocarcinoma
- C.** Pulmonary squamous-cell carcinoma
- D.** Malignant pleural mesothelioma
- E.** Typical pulmonary carcinoid

220. A woman presents with isolated metastatic adenocarcinoma in axillary lymph nodes. Breast examination and mammography are unrevealing, but the tumor is ER positive, GATA3 positive, and consistent with breast origin. How should this favorable unknown-primary syndrome be approached?

- A.** Treat as an ovarian primary
- B.** Treat according to an occult breast-cancer paradigm

- C. Carcinoma-of-unknown-primary chemotherapy
- D. Treat as primary lung adenocarcinoma
- E. Site-agnostic cytotoxic chemotherapy

221. A 27-year-old man has a painless solid intratesticular mass on ultrasound and no evidence of an acute infection. What is the correct initial surgical approach?

- A. Transscrotal needle biopsy
- B. Transscrotal orchiectomy
- C. Observation
- D. Antibiotics followed by biopsy
- E. Radical inguinal orchiectomy

222. A patient with myelofibrosis has marked splenomegaly, constitutional symptoms, and a JAK2 mutation. Which therapy is commonly used to improve splenic and symptom burden?

- A. Hydroxyurea alone
- B. Immediate splenectomy
- C. Ruxolitinib (JAK inhibitor)
- D. Interferon alfa
- E. Observation alone

223. A breast tumor is ER positive, PR positive, HER2 negative, and has a PIK3CA activating mutation. Which signaling pathway is directly activated by this mutation?

- A. The JAK-STAT pathway
- B. The RAS-RAF-MEK-ERK pathway
- C. The WNT-beta-catenin pathway
- D. The PI3K-AKT-mTOR pathway
- E. The DNA mismatch-repair pathway

224. A patient has an unresectable gastrointestinal stromal tumor with an activating KIT exon 11 mutation. Which systemic therapy is standard first line?

- A.** Sunitinib
- B.** Imatinib therapy
- C.** Doxorubicin
- D.** Observation
- E.** Cetuximab

225. A survivor received splenic irradiation and later underwent splenectomy as part of cancer treatment. Which long-term preventive issue is especially important?

- A.** Routine antifungal therapy for every afebrile illness
- B.** Avoidance of all inactivated vaccines for life
- C.** Vaccination and education about infection risk from encapsulated organisms
- D.** Permanent isolation from household contacts
- E.** Elimination of the need for urgent evaluation of fever

226. A patient with squamous cell lung carcinoma develops severe hypercalcemia with a suppressed parathyroid hormone level and elevated parathyroid hormone-related peptide. What mechanism is responsible?

- A.** Ectopic calcitonin secretion
- B.** Excess intact parathyroid hormone from the lung tumor
- C.** Osteoblastic metastases causing calcium release
- D.** Vitamin D deficiency from cancer cachexia
- E.** Tumor secretion of PTH-related peptide

227. A patient with bulky node-positive penile squamous cell carcinoma has fixed inguinal adenopathy but no distant metastases. Which systemic approach is commonly used before definitive nodal surgery in a fit patient?

- A. Upfront inguinal lymph-node dissection
- B. Androgen-deprivation therapy
- C. Single-agent cetuximab
- D. Observation until distant metastases
- E. Neoadjuvant TIP chemotherapy

228. A patient with aggressive lymphoma develops persistent fever, hepatosplenomegaly, cytopenias, liver dysfunction, triglyceride elevation, and a ferritin level above 20,000 ng/mL. Infection evaluation is unrevealing. Which syndrome should be urgently considered?

- A. Sepsis alone
- B. Tumor lysis syndrome
- C. Lymphoma-associated secondary HLH
- D. Autoimmune hemolytic anemia
- E. Disseminated intravascular coagulation

229. A patient with metastatic breast cancer has an equivocal HER2 immunohistochemistry result of 2+. Which test is used to determine whether the tumor is HER2 amplified for classic HER2-positive treatment classification?

- A. Repeat HER2 immunohistochemistry alone until a 0, 1+, or 3+ score is obtained
- B. In situ hybridization for ERBB2 amplification
- C. Serum HER2 concentration
- D. PD-L1 combined positive score
- E. PIK3CA mutation testing

230. A patient has metastatic well-differentiated midgut neuroendocrine tumor with somatostatin-receptor expression, low-volume growth, and intermittent flushing and diarrhea. Which initial systemic treatment is appropriate?

- A.** Immediate cytotoxic platinum-etoposide chemotherapy despite a well-differentiated low-volume somatostatin-receptor-positive midgut tumor
- B.** A long-acting somatostatin analogue such as octreotide LAR or lanreotide
- C.** Observation without symptom-directed therapy despite active carcinoid flushing and diarrhea
- D.** Trastuzumab because somatostatin-receptor expression predicts HER2 dependence
- E.** Surgical resection of all metastatic sites is mandatory before any somatostatin analogue can be started

231. A patient has metastatic gestational trophoblastic neoplasia with a high WHO risk score and liver metastases. Which treatment approach is standard?

- A.** Single-agent methotrexate
- B.** Single-agent actinomycin D
- C.** Multiagent chemotherapy such as EMA-CO
- D.** Hysterectomy alone
- E.** Observation after uterine evacuation

232. A patient with a controlled extracranial solid tumor develops two asymptomatic brain metastases measuring 1.0 and 1.4 cm in noneloquent regions. What is an appropriate local treatment?

- A.** Whole-brain radiation therapy
- B.** Observation without local therapy
- C.** Surgical resection of both lesions
- D.** Conventional fractionated whole-brain radiation
- E.** Stereotactic radiosurgery

233. A placebo-controlled oncology trial is proposed when an established therapy improves survival and withholding it would expose participants to avoidable serious harm. Which ethical principle most strongly argues against the design?

- A.** Placebos are never permitted in supportive-care studies

- B.** Clinical equipoise is absent for withholding effective standard therapy
- C.** Blinding is prohibited whenever survival is an endpoint
- D.** Investigators must always choose the least expensive therapy
- E.** Randomization is unethical in every oncology trial

234. A patient presents with metastatic poorly differentiated carcinoma involving liver and bone, and initial imaging does not reveal a primary tumor. What is the most appropriate diagnostic principle?

- A.** Begin empiric chemotherapy after fine-needle aspiration alone and defer additional tissue because molecular classification cannot affect management
- B.** Order a broad unstructured immunohistochemistry panel on scant tissue even if it exhausts material needed for molecular testing
- C.** Assume a pancreaticobiliary primary from liver involvement alone without integrating histology, immunophenotype, and clinical pattern
- D.** Delay biopsy and use serum tumor markers as the principal method of assigning the primary site
- E.** Obtain adequate core tissue for histology, focused immunohistochemistry, and molecular testing guided by the clinical pattern

235. A patient on long-term high-dose opioids for cancer pain becomes acutely somnolent with pinpoint pupils and a respiratory rate of 6/min after a dose increase. Which immediate problem should be addressed?

- A.** Acute adrenal insufficiency proven by pupillary constriction
- B.** Clinically significant opioid toxicity with respiratory depression
- C.** Serotonin syndrome caused by all opioid medications
- D.** Expected analgesic tolerance requiring a further rapid dose increase
- E.** Malignant hypercalcemia as the only possible cause

236. A patient with lung adenocarcinoma develops progressive headaches and focal weakness. MRI shows three small brain metastases, each less than 2 cm, with limited total intracranial volume and no leptomeningeal disease. Which local approach is often preferred?

- A.** Stereotactic radiosurgery
- B.** Whole-brain radiation therapy
- C.** Observation
- D.** Surgical resection of all lesions
- E.** Fractionated whole-brain radiation

237. A man starting long-term androgen-deprivation therapy for prostate cancer has osteopenia and additional fracture-risk factors. Which survivorship measure is appropriate?

- A.** Avoid resistance exercise because it increases fracture risk
- B.** Use calcium and vitamin D alone without assessing bone density or fracture risk
- C.** Start high-dose corticosteroids to prevent androgen-deprivation-related bone loss
- D.** Delay bone-health assessment until a fragility fracture occurs
- E.** Bone-density/fracture assessment plus exercise, calcium/vitamin D, and indicated antiresorptive therapy

238. A patient with multiple myeloma develops new macroglossia, nephrotic-range proteinuria, restrictive cardiomyopathy, and periorbital purpura. Which complication best explains this constellation?

- A.** AL amyloidosis
- B.** Cast nephropathy
- C.** Hyperviscosity syndrome
- D.** POEMS syndrome
- E.** Cryoglobulinemia

239. A clinically node-negative patient with a small invasive breast cancer is undergoing breast-conserving surgery. Which axillary staging approach minimizes morbidity while providing regional staging information?

- A.** Routine axillary lymph-node dissection

- B.** Sentinel lymph-node biopsy, as the next management strategy
- C.** Omit all axillary staging
- D.** Axillary radiation without surgical staging
- E.** PET/CT instead of pathologic axillary staging

240. A patient has progressive metastatic, well-differentiated, somatostatin-receptor-positive neuroendocrine tumor despite a somatostatin analogue. Which therapy delivers targeted radiation through the somatostatin receptor?

- A.** Lutetium-177-dotatate PRRT
- B.** External-beam radiation to all metastatic sites
- C.** Iodine-131 radioiodine therapy
- D.** Radium-223
- E.** Lutetium-177-PSMA-617

Answers

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- 1. E.** Biopsy of a safely accessible metastatic site can confirm recurrence and reassess ER, PR, and HER2 because clinically meaningful receptor discordance occurs. Current metastatic biology should guide therapy when tissue can be obtained without disproportionate risk.
 - 2. B.** Low-risk stage II dMMR colon cancer has a favorable prognosis and does not derive the same benefit from fluoropyrimidine monotherapy as mismatch-repair-proficient disease. Adjuvant decisions are individualized for high-risk features, and routine postoperative immunotherapy is not standard for all stage II disease.
 - 3. A.** Suspected acute promyelocytic leukemia is a hematologic emergency because early hemorrhagic death can occur. All-trans retinoic acid should be started as soon as APL is suspected while molecular confirmation is obtained and coagulopathy is aggressively supported. Delaying ATRA for confirmatory testing can be dangerous.
 - 4. E.** Active surveillance is preferred for many men with low-risk localized prostate cancer because it preserves quality of life while retaining curative treatment options if higher-risk features emerge. Surveillance is active and protocol based rather than simple neglect.

- 5. C.** Metastatic nonsquamous NSCLC should undergo comprehensive biomarker evaluation for actionable driver alterations along with PD-L1 testing before treatment when clinically feasible. Targetable alterations can determine first-line therapy and may make immunotherapy-first strategies less appropriate.
- 6. A.** Breakthrough cancer pain is treated with a rapidly acting rescue opioid while the background analgesic regimen is continued and then reassessed. Transdermal formulations are too slow for episodic rescue, and naloxone would antagonize analgesia unless clinically significant opioid toxicity is present.
- 7. D.** Resected stage IIB and IIC melanoma carries substantial recurrence risk, and adjuvant anti-PD-1 therapy reduces recurrence in appropriate patients. The decision balances recurrence risk against immune-related toxicity and patient preferences.
- 8. A.** In oropharyngeal squamous-cell carcinoma, strong p16 expression is used as a surrogate for transcriptionally active HPV in the appropriate clinical context and defines a distinct AJCC staging system with generally better prognosis. Smoking exposure and other clinical factors still matter.
- 9. D.** The absolute risk reduction is 20% minus 12%, or 8%. The number needed to treat is $1/0.08 = 12.5$, which is rounded up to 13. Relative risk reduction cannot be used directly to calculate NNT, and rounding down would overstate benefit.
- 10. E.** For advanced epithelial ovarian cancer, complete gross resection is a major prognostic goal. When an experienced gynecologic oncology team believes optimal cytoreduction is feasible with acceptable morbidity, primary surgery followed by platinum-taxane chemotherapy is appropriate.
- 11. A.** Adjuvant endocrine therapy substantially reduces recurrence risk in hormone receptor-positive breast cancer. For many postmenopausal patients, an aromatase inhibitor is preferred or incorporated into a sequential endocrine strategy. HER2-targeted therapy and checkpoint inhibition require different tumor biology.
- 12. B.** Stage III colon cancer benefits from adjuvant oxaliplatin combined with a fluoropyrimidine. Duration and regimen can be tailored according to pathologic risk and neuropathy considerations, but the curative backbone is FOLFOX or CAPOX rather than therapies used for other malignancies.
- 13. A.** For low-risk APL, all-trans retinoic acid plus arsenic trioxide is a highly effective chemotherapy-sparing induction approach. Conventional AML cytarabine alone does not target the defining differentiation block, and B-cell or BCR::ABL1-directed regimens have no role in PML::RARA-positive APL.
- 14. A.** High-risk localized prostate cancer treated with definitive radiation generally receives a prolonged course of androgen-deprivation therapy because the combination improves oncologic outcomes. The alternative systemic agents are not prostate-cancer therapies.

- 15. C.** Classical sensitizing EGFR mutations such as exon 19 deletion are treated first line with an EGFR-directed strategy centered on osimertinib, with contemporary options including osimertinib alone or selected combination approaches. Immunotherapy or unrelated targeted agents should not replace matched EGFR therapy in a treatment-naïve patient.
- 16. A.** Opioid-induced constipation is common and tolerance develops poorly, so prophylaxis with a stimulant laxative, often combined with an osmotic agent, is appropriate. Acid suppression, antidiarrheals, and pancreatic enzymes do not prevent opioid-related reduced gut motility.
- 17. C.** In high-risk premenopausal hormone receptor-positive disease, ovarian function suppression combined with an aromatase inhibitor is an effective adjuvant endocrine strategy. Aromatase inhibitors alone are inadequate when ovarian estrogen production remains active, and fulvestrant is not standard adjuvant therapy.
- 18. C.** For left-sided RAS-wild-type metastatic colorectal cancer, an anti-EGFR antibody combined with a fluoropyrimidine-oxaliplatin or irinotecan doublet is a preferred first-line approach in appropriate patients. Tumor sidedness and RAS status are important predictors of benefit.
- 19. B.** Midostaurin added to intensive chemotherapy improves outcomes in newly diagnosed FLT3-mutated AML and is a standard targeted component for appropriate fit patients. Ibrutinib targets BTK, ruxolitinib targets JAK signaling, and bortezomib and lenalidomide are primarily used in plasma-cell disorders.
- 20. D.** PSMA PET has substantially greater sensitivity than conventional imaging for biochemical recurrence of prostate cancer, even at relatively low PSA levels. Findings can help guide salvage radiation fields or identify metastatic disease that changes management.
- 21. E.** Neoadjuvant immune checkpoint therapy has become an important strategy for resectable stage III melanoma. Pembrolizumab given before and after surgery established benefit, and contemporary practice increasingly uses response-adapted neoadjuvant immunotherapy in experienced multidisciplinary settings.
- 22. B.** EGFR exon 20 insertion NSCLC has distinct drug sensitivity from common exon 19 deletion or L858R disease. Amivantamab combined with platinum-pemetrexed is an established frontline option. ALK-, BRAF-, or immunotherapy-only strategies do not directly address this alteration.
- 23. E.** Concurrent cisplatin with definitive radiation improves locoregional control and survival in appropriate patients with locally advanced head and neck squamous-cell carcinoma. Treatment requires attention to hearing, renal function, swallowing, nutrition, and long-term functional toxicity.
- 24. C.** A hazard ratio below 1 favors the experimental arm; because the 95% confidence interval does not include 1, the result is statistically significant at the conventional two-sided 0.05 level. A hazard ratio is a relative comparison of event hazards, not an absolute risk reduction and not a direct statement that each patient's survival is prolonged by the same percentage.

- 25. A.** Somatostatin analogues such as octreotide reduce gastrointestinal secretions and can lessen vomiting in malignant bowel obstruction. Prokinetic therapy may worsen cramping in complete obstruction, while laxatives and antidiarrheals do not address the secretory component of this syndrome.
- 26. C.** In selected early-stage HR-positive, HER2-negative breast cancers, validated multigene expression assays can refine recurrence risk and estimate likely chemotherapy benefit. Routine serum tumor markers do not provide this predictive information in localized disease.
- 27. C.** Activating RAS mutations signal downstream of EGFR and predict lack of benefit from cetuximab or panitumumab. Anti-EGFR therapy should therefore not be used for conventional RAS-mutant metastatic colorectal cancer unless a specific later-line targeted strategy directly addresses an actionable RAS alteration.
- 28. E.** A hypomethylating agent such as azacitidine combined with venetoclax is a standard frontline approach for many older or medically unfit patients with AML. The other regimens are used in lymphoid malignancies or plasma-cell disorders and do not represent standard AML induction in this setting.
- 29. E.** Neoadjuvant carboplatin-paclitaxel followed by interval cytoreduction is appropriate when primary complete resection is unlikely or operative risk is excessive. The strategy should be based on multidisciplinary assessment and histologic confirmation.
- 30. D.** Treatment intensification at the hormone-sensitive metastatic stage improves survival compared with ADT alone. Options include androgen-receptor pathway inhibitors and, for selected patients, docetaxel-containing triplet therapy. Choice depends on disease volume, symptoms, comorbidities, and patient preference.
- 31. B.** Modern next-generation ALK inhibitors with strong intracranial activity are preferred for metastatic ALK-positive NSCLC; lorlatinib is a leading first-line option, with alectinib also widely used. The other drugs are matched to EGFR, KRAS G12C, RET, or MET alterations rather than ALK.
- 32. D.** Systemic opioids can reduce the sensation of refractory dyspnea in advanced illness when reversible causes have been addressed. Oxygen is most useful for hypoxemia; simply increasing oxygen in a nonhypoxemic patient or using treatments without a relevant physiologic indication adds burden without predictable benefit.
- 33. C.** Adjuvant abemaciclib combined with endocrine therapy reduces recurrence risk in selected patients with node-positive, high-risk HR-positive, HER2-negative early breast cancer. The other agents are targeted to EGFR-mutant lung cancer, FGFR-altered urothelial cancer, RET-driven tumors, or JAK-driven myeloproliferative disease.
- 34. B.** BRAF V600E colorectal cancer is biologically distinct and requires simultaneous blockade of BRAF and EGFR because feedback EGFR activation limits BRAF-inhibitor monotherapy. Encorafenib plus cetuximab is an established targeted regimen after prior therapy.

- 35. D.** Gemtuzumab ozogamicin is an anti-CD33 antibody-drug conjugate with established benefit when incorporated into treatment of selected AML, particularly favorable-risk core-binding-factor disease. The other antibody-drug conjugates target antigens relevant to lymphoma, myeloma, or cervical cancer rather than CD33-positive AML.
- 36. C.** Combined PD-1 and CTLA-4 blockade produces deep and durable responses in metastatic melanoma, at the cost of more immune toxicity than PD-1 monotherapy. Nivolumab-relatlimab or anti-PD-1 monotherapy are alternatives for selected patients depending on efficacy-toxicity priorities.
- 37. C.** In fit patients with metastatic hormone-sensitive prostate cancer, triplet therapy combining ADT, docetaxel, and an androgen-receptor pathway inhibitor such as darolutamide improves survival over ADT and docetaxel alone. The other agents have no standard role in prostate adenocarcinoma.
- 38. E.** Pembrolizumab monotherapy is an appropriate first-line option for PD-L1 CPS-positive recurrent or metastatic HNSCC when rapid cytoreduction is not required. Pembrolizumab plus platinum and fluorouracil is another standard across a broader population when a higher response rate is desired.
- 39. E.** For a noninferiority question, the key comparison is the confidence interval against the prespecified margin. Because the upper confidence limit of 1.20 remains below 1.25, noninferiority is demonstrated. Inclusion of 1.00 means superiority is not established, but it does not invalidate a noninferiority conclusion.
- 40. C.** Adjuvant alectinib improves disease-free survival after resection of appropriate ALK-positive NSCLC and is a standard targeted option. The alternatives target KRAS G12C, RET in thyroid cancer, homologous-recombination deficiency, or IDH1 rather than ALK.
- 41. E.** Ribociclib with an aromatase inhibitor is an adjuvant option for selected patients with stage II or III HR-positive, HER2-negative early breast cancer. The other agents are directed at ALK, KRAS G12C, HER2, or IDH1 alterations in other settings.
- 42. A.** MSI-H/dMMR metastatic colorectal cancer is highly responsive to immune checkpoint blockade, and pembrolizumab is a preferred first-line option. Identifying mismatch-repair status at diagnosis is therefore essential for treatment selection.
- 43. A.** Severe symptomatic hypercalcemia of malignancy requires prompt volume repletion and inhibition of bone resorption; calcitonin can provide a faster but transient effect while a bisphosphonate or denosumab takes effect. Thiazides can worsen hypercalcemia, and routine calcium supplementation is inappropriate in this setting.
- 44. B.** Mutant IDH1 is directly targetable in AML with approved IDH1 inhibitors such as ivosidenib or olutasidenib in appropriate settings. BTK, BCR::ABL1, CD20, and proteasome-directed agents treat different hematologic diseases and do not address an IDH1-mutated AML clone.

- 45. D.** Capivasertib, an AKT inhibitor, received a 2026 indication with abiraterone and prednisone for PTEN-deficient metastatic androgen-pathway modulation-sensitive prostate cancer. This is a biomarker-selected strategy rather than a universal addition for every patient with metastatic prostate cancer.
- 46. D.** BRCA1/2-mutated ovarian cancers are particularly sensitive to PARP inhibition because of homologous-recombination repair deficiency. Maintenance PARP therapy after response to platinum can substantially delay recurrence in appropriate patients, with agent selection influenced by prior bevacizumab and biomarker context.
- 47. E.** Repotrectinib is a potent ROS1 inhibitor with intracranial activity and is an appropriate option for ROS1-positive metastatic NSCLC. The other agents target EGFR, FGFR, estrogen receptor, or JAK signaling.
- 48. D.** Stage II to III HER2-positive breast cancer is commonly treated with neoadjuvant chemotherapy plus trastuzumab and pertuzumab. Pathologic response then guides postoperative therapy, allowing escalation for residual disease and continuation of HER2-directed treatment for patients with excellent response.
- 49. B.** In colorectal cancer, KRAS G12C inhibition is more effective when combined with EGFR blockade because EGFR-mediated feedback can reactivate signaling. Regimens pairing a KRAS G12C inhibitor with cetuximab or panitumumab are established later-line options.
- 50. D.** BRAF V600-mutant melanoma can respond rapidly to combined BRAF and MEK inhibition. Immunotherapy often provides more durable control and is preferred first in many clinically stable patients, but targeted therapy is particularly useful when rapid disease reduction is needed.
- 51. E.** CPX-351 is a fixed-ratio liposomal formulation of daunorubicin and cytarabine used for therapy-related AML and AML with myelodysplasia-related features in appropriate patients. The alternative agents listed are directed at lymphoid, BCR::ABL1-positive, or plasma-cell disorders.
- 52. E.** New neurologic deficits with back pain in a patient with cancer are an oncologic emergency suggesting epidural spinal cord compression. Corticosteroids and urgent MRI should be initiated promptly while radiation oncology and/or spine surgery evaluates definitive treatment. Plain films and bone scans are insufficient to exclude epidural disease.
- 53. D.** Pembrolizumab combined with platinum-fluorouracil is a standard first-line option for recurrent or metastatic HNSCC and is particularly useful when disease burden or symptoms make response rate important. PD-L1 CPS helps determine when pembrolizumab monotherapy is reasonable.
- 54. A.** Classic phase I oncology trials primarily characterize safety, pharmacology, and a dose or exposure suitable for later study, often using dose-limiting toxicity information. They are generally not powered to establish survival benefit, screening effectiveness, or comparative efficacy between standard regimens.

- 55. E.** BRCA2 loss produces homologous-recombination repair deficiency and predicts sensitivity to PARP inhibition in metastatic castration-resistant prostate cancer. The exact PARP regimen depends on prior therapy, regulatory indication, and the alteration involved.
- 56. C.** Selective RET inhibition with selpercatinib is a preferred biomarker-matched strategy for RET fusion-positive NSCLC. The distractors target BRAF V600E, KRAS G12C, ALK, or PIK3CA alterations.
- 57. C.** For HER2-positive early breast cancer with residual invasive disease after neoadjuvant trastuzumab-based taxane therapy, trastuzumab deruxtecan became an approved adjuvant escalation option in 2026. This is a current-practice update; treatment selection must also consider pulmonary toxicity risk and the patient's prior therapy.
- 58. B.** Dual HER2 targeting with tucatinib plus trastuzumab is an established later-line option for HER2-positive, RAS-wild-type metastatic colorectal cancer. HER2 amplification can also confer resistance to anti-EGFR therapy, making biomarker testing important.
- 59. D.** Respiratory and neurologic symptoms in AML with marked hyperleukocytosis are classic for leukostasis, a medical emergency requiring urgent cytoreduction and definitive leukemia therapy. The other conditions can cause anemia, bleeding, or viscosity symptoms but do not fit the myeloid blast burden described.
- 60. C.** An indwelling pleural catheter provides outpatient control of recurrent malignant pleural effusion and is especially useful when minimizing repeated procedures is a priority. Repeated thoracenteses can be burdensome, and corticosteroids or prophylactic radiation do not reliably control malignant fluid accumulation.
- 61. A.** Lutetium-177-PSMA-617 delivers beta radiation to PSMA-expressing prostate-cancer cells and improves outcomes in appropriately selected mCRPC. Eligibility is based on PSMA imaging, prior therapy, marrow reserve, and organ function.
- 62. E.** Tebentafusp is a bispecific T-cell receptor therapy that recognizes a gp100 peptide presented by HLA-A*02:01 and improves survival in metastatic uveal melanoma. HLA typing is therefore required before use.
- 63. D.** Dual HER2 blockade with trastuzumab and pertuzumab plus a taxane remains a foundational first-line regimen for HER2-positive metastatic breast cancer. The alternative combinations are used in renal-cell cancer, prostate cancer, melanoma, or AML.
- 64. B.** Selected patients with colorectal liver metastases can achieve long-term disease control or cure with complete resection or ablation. Conversion therapy aims to make initially unresectable disease removable, so response should trigger reassessment by hepatobiliary surgery and multidisciplinary oncology rather than automatic indefinite chemotherapy.

- 65. C.** MET exon 14 skipping is an actionable alteration in NSCLC and can be treated with selective MET inhibitors such as capmatinib or tepotinib. The other pairs target EGFR, ALK, BRAF, or homologous-recombination pathways.
- 66. D.** A long treatment-free interval after platinum predicts retained platinum sensitivity in recurrent ovarian cancer. A platinum-containing combination is generally preferred when the patient can tolerate it, with additional targeted therapy or maintenance selected according to prior treatment and biomarkers.
- 67. D.** Rasburicase enzymatically degrades existing uric acid and is useful for high-risk or established tumor lysis syndrome. Allopurinol and febuxostat reduce new uric-acid formation but do not rapidly remove uric acid already present. Thiazides can worsen hyperuricemia.
- 68. C.** For recurrent or metastatic nasopharyngeal carcinoma, adding the PD-1 inhibitor toripalimab to gemcitabine-cisplatin improves progression-free and overall survival and is a contemporary first-line standard. This disease has distinct biology and treatment from other head and neck squamous cancers.
- 69. A.** Phase II trials commonly use an efficacy signal such as objective response rate, disease-control rate, or progression-free survival, depending on the disease and setting. A single-arm phase II study cannot directly estimate a randomized overall-survival difference, and population incidence or germline prevalence does not measure drug antitumor activity.
- 70. D.** Large-volume paracentesis is a direct and rapid method of relieving symptoms from tense malignant ascites. Diuretics may help selected patients, particularly with portal-hypertensive physiology, but they are less predictably effective for peritoneal carcinomatosis and are not as immediate.
- 71. A.** Radium-223 is an alpha-emitting calcium mimetic used for symptomatic bone-predominant mCRPC without known visceral metastases. It is not simply an imaging tracer and should be integrated carefully with other systemic and bone-protective therapies.
- 72. C.** Trastuzumab deruxtecan is a preferred second-line therapy after prior trastuzumab-pertuzumab-based treatment for HER2-positive metastatic breast cancer, with strong systemic and intracranial activity. Clinicians must monitor for interstitial lung disease and other treatment-specific toxicities.
- 73. A.** Total neoadjuvant therapy delivers all planned chemotherapy and pelvic radiation before surgery and is a standard approach for many locally advanced rectal cancers. It improves systemic therapy delivery and can increase pathologic complete response while supporting organ-preservation strategies in selected patients.
- 74. C.** BRAF V600E activates the MAPK pathway and is treated with combined BRAF and MEK inhibition such as dabrafenib plus trametinib. The other regimens are matched to different oncogenic pathways or diseases.

- 75. A.** Lenalidomide has high erythroid response rates in lower-risk MDS with del(5q). Imatinib targets BCR::ABL1 or selected kinase-driven disease, rituximab targets CD20-positive lymphoid cells, and the remaining agents do not address the characteristic del(5q) MDS biology.
- 76. B.** Merkel-cell carcinoma is highly immunogenic, and PD-1/PD-L1 checkpoint blockade produces durable responses and is preferred over cytotoxic chemotherapy for most advanced cases. Avelumab, pembrolizumab, and other active checkpoint strategies may be used depending on setting.
- 77. C.** Duloxetine has the best evidence for treatment of painful chemotherapy-induced peripheral neuropathy. The other agents listed have roles in unrelated toxicities or conditions and are not established therapies for chronic painful taxane neuropathy.
- 78. E.** Sipuleucel-T is an autologous cellular immunotherapy that can improve overall survival in selected asymptomatic or minimally symptomatic mCRPC. It does not typically produce rapid PSA declines or tumor shrinkage and is not appropriate when urgent disease control is needed.
- 79. E.** The tucatinib-trastuzumab-capecitabine regimen is an important HER2-directed option with demonstrated benefit in patients with brain metastases. Choice among active HER2 regimens depends on prior treatment, CNS status, toxicity, and availability.
- 80. D.** Carefully selected patients with a convincing clinical complete response can pursue nonoperative management in experienced programs with rigorous surveillance and prompt salvage surgery for local regrowth. This is not equivalent to discharge from follow-up because regrowth risk is clinically meaningful.
- 81. B.** Hypomethylating therapy with azacitidine or decitabine is a standard disease-modifying approach in higher-risk MDS and can be used as a bridge while transplant candidacy is evaluated. Observation alone is inadequate for many symptomatic high-risk patients, and the other therapies do not target MDS.
- 82. E.** KRAS G12C is directly targetable after prior systemic therapy with agents such as adagrasib or sotorasib. The other agents are appropriate only for their corresponding ALK, RET, EGFR, or homologous-recombination contexts.
- 83. A.** Secretory carcinoma commonly harbors ETV6::NTRK3, creating a targetable TRK fusion. Selective TRK inhibitors can produce deep responses in fusion-positive disease regardless of the anatomic primary site.
- 84. D.** Intention-to-treat preserves the prognostic balance created by randomization by analyzing participants in their assigned groups. Per-protocol and as-treated approaches reclassify patients according to adherence or therapy received and can introduce bias, particularly when crossover is related to prognosis.

- 85. B.** Bevacizumab can cause gastrointestinal perforation, impaired wound healing, hypertension, bleeding, and thromboembolism. Active or recent bowel obstruction and extensive bowel involvement increase concern for perforation and should strongly influence risk-benefit assessment.
- 86. D.** Endocrine therapy combined with a CDK4/6 inhibitor is a preferred first-line approach for most HR-positive, HER2-negative metastatic breast cancer without visceral crisis. Cytotoxic chemotherapy is reserved for situations where endocrine therapy is unsuitable or rapid disease control is required.
- 87. A.** Anal squamous-cell carcinoma is usually treated with definitive chemoradiation using a fluoropyrimidine plus mitomycin, preserving the sphincter in most patients. Surgery is generally reserved for persistent or recurrent local disease.
- 88. B.** Treatment-emergent neuroendocrine prostate cancer often loses androgen-receptor dependence, produces little PSA, and behaves like small-cell carcinoma. Platinum-based chemotherapy is therefore commonly used, while endocrine therapy alone is unlikely to control aggressive neuroendocrine disease.
- 89. B.** Anthracyclines can cause late cardiomyopathy, and mediastinal radiation increases risk for coronary, valvular, and other cardiovascular disease. Survivorship care should therefore include risk-factor management and symptom-directed cardiovascular evaluation rather than focusing only on acute treatment toxicity.
- 90. E.** Chronic-phase CML is driven by BCR::ABL1 and is treated with a BCR::ABL1 tyrosine kinase inhibitor, with serial molecular monitoring of transcript levels. Modern TKI therapy produces durable disease control for most patients and has replaced upfront transplantation for typical chronic-phase disease.
- 91. A.** Trastuzumab deruxtecan has activity in HER2-mutant metastatic NSCLC and is an established targeted option. The other antibody-drug conjugates are used in CD30-positive lymphoma, CD33-positive AML, urothelial cancer, or cervical cancer.
- 92. A.** Advanced cutaneous squamous-cell carcinoma is highly responsive to PD-1 blockade, and cemiplimab is a standard therapy when curative surgery or radiation is not feasible. Cytotoxic chemotherapy is generally less durable and more toxic.
- 93. C.** Elacestrant is an oral selective estrogen receptor degrader approved for ESR1-mutated ER-positive, HER2-negative advanced breast cancer after prior endocrine therapy. The alternative agents target HER2, KRAS G12C, ALK, or FGFR alterations.
- 94. A.** HER2-positive advanced gastric or gastroesophageal junction adenocarcinoma is treated with trastuzumab plus platinum-fluoropyrimidine chemotherapy, with pembrolizumab added for appropriately PD-L1-positive disease. HER2 and PD-L1 testing therefore have direct first-line implications.

- 95. D.** Adjuvant pembrolizumab improves disease-free and overall survival in selected patients with clear-cell RCC at high risk of recurrence after nephrectomy. Patient selection considers pathologic risk, recovery, autoimmune history, and the potential for immune-related toxicity.
- 96. A.** The T315I gatekeeper mutation confers resistance to several earlier BCR::ABL1 TKIs. Ponatinib has activity against T315I and is an important option, with careful attention to vascular risk. Imatinib is ineffective against T315I, and the other agents do not target BCR::ABL1.
- 97. B.** Immune checkpoint inhibitors can cause hypophysitis and secondary adrenal insufficiency. Acute adrenal crisis requires stress-dose glucocorticoids, followed by physiologic replacement as indicated; mineralocorticoid replacement is generally not required for isolated secondary adrenal insufficiency because aldosterone is preserved.
- 98. A.** Differentiated thyroid cancers can retain sodium-iodide symporter function and concentrate radioactive iodine. Iodine-131 can therefore treat iodine-avid residual or metastatic disease in appropriately selected patients after thyroidectomy and TSH stimulation.
- 99. C.** Lead-time bias occurs when earlier diagnosis makes survival measured from the date of diagnosis appear longer even though the patient's actual time of death is unchanged. It is a central reason that screening benefit should be evaluated with outcomes such as disease-specific or all-cause mortality rather than postdiagnosis survival alone.
- 100. D.** NTRK fusions are tumor-agnostic actionable drivers and can be treated with selective TRK inhibitors. The alternative drug classes target B-cell signaling, hormone-receptor breast cancer, angiogenesis in selected tumors, or estrogen synthesis.
- 101. B.** PIK3CA-mutated HR-positive, HER2-negative metastatic breast cancer can be treated with the PI3K-alpha inhibitor alpelisib plus fulvestrant after appropriate prior endocrine therapy. Hyperglycemia and rash are important toxicities that require baseline assessment and monitoring.
- 102. E.** Zolbetuximab targets claudin 18.2 and improves outcomes when added to first-line chemotherapy for appropriately selected CLDN18.2-positive, HER2-negative advanced gastric or gastroesophageal junction adenocarcinoma. Nausea and vomiting are notable treatment-related toxicities.
- 103. C.** Locally advanced cervical cancer is treated with definitive external-beam radiation plus brachytherapy and concurrent cisplatin. For high-risk locally advanced disease, pembrolizumab added to chemoradiation and continued as maintenance is a contemporary standard in appropriate patients.
- 104. E.** Nivolumab plus ipilimumab is a standard first-line option for intermediate- or poor-risk advanced clear-cell RCC. Several immune-checkpoint inhibitor plus VEGF-targeted TKI combinations are also standards, and selection depends on disease tempo, comorbidity, toxicity, and patient preference.

- 105. E.** Asymptomatic early-stage CLL without accepted indications for treatment is managed with active surveillance. Early systemic therapy has not been shown to improve survival simply because lymphocytosis is present, and treatment is initiated when disease-related symptoms, progressive cytopenias, bulky disease, or other defined indications develop.
- 106. D.** Most basal-cell carcinomas have aberrant Hedgehog pathway activation, commonly through PTCH1 loss. Smoothed inhibitors such as vismodegib or sonidegib can control advanced disease; PD-1 blockade is another option after Hedgehog-inhibitor failure or intolerance.
- 107. B.** Fertility risks and preservation options should be discussed before potentially gonadotoxic therapy whenever feasible. Age lowers but does not eliminate infertility risk, and preservation strategies are time sensitive; pregnancy during cytotoxic therapy is not an alternative preservation strategy.
- 108. D.** For metastatic NSCLC without a targetable driver and with high PD-L1 expression, single-agent pembrolizumab is an appropriate first-line option in selected patients. Matched targeted drugs should not be used without their corresponding molecular alterations.
- 109. E.** Capivasertib is an AKT inhibitor used with fulvestrant in appropriate HR-positive, HER2-negative advanced breast cancer with relevant PI3K/AKT/PTEN pathway alterations after endocrine progression. The other kinase inhibitors target unrelated pathways.
- 110. B.** For many patients with HER2-negative advanced gastric or GEJ adenocarcinoma, a PD-1 inhibitor is combined with first-line platinum-fluoropyrimidine chemotherapy, with the magnitude of benefit influenced by PD-L1 expression. MSI-H/dMMR disease is especially immunotherapy sensitive.
- 111. D.** Checkpoint inhibitor plus VEGF-pathway TKI combinations are major first-line standards in metastatic clear-cell RCC. Pembrolizumab plus lenvatinib is one such regimen and can produce high response rates, with monitoring for hypertension, diarrhea, thyroid dysfunction, hepatic toxicity, and immune adverse events.
- 112. D.** TP53 disruption predicts poor response durability with conventional chemoimmunotherapy in CLL. Modern targeted options such as covalent BTK inhibitors or venetoclax-based regimens are preferred when treatment is indicated. Treatment choice is individualized according to comorbidity, drug interactions, and desired duration.
- 113. A.** Lenvatinib, a multikinase inhibitor targeting VEGFR and other kinases, is a standard first-line therapy for progressive radioactive-iodine-refractory differentiated thyroid carcinoma. Hypertension, proteinuria, diarrhea, and weight loss require active monitoring.
- 114. D.** The interval between diagnosis and receipt of maintenance therapy is 'immortal' for patients ultimately classified as exposed because they must survive that interval to enter the exposed group. Failure to model exposure as time-dependent can therefore create an artificial survival advantage.

- 115. E.** Premature estrogen deprivation can accelerate bone loss, especially when ovarian suppression and aromatase inhibition are used. Survivorship care should include bone-health assessment, weight-bearing activity, adequate calcium and vitamin D intake when appropriate, and pharmacologic therapy for patients at sufficient fracture risk.
- 116. E.** For driver-negative metastatic nonsquamous NSCLC, platinum-pemetrexed plus pembrolizumab is a standard chemoimmunotherapy regimen across PD-L1 expression levels. The other regimens treat Hodgkin lymphoma, B-cell lymphoma, small-cell lung cancer, or hormone-receptor breast cancer.
- 117. C.** Trastuzumab deruxtecan has clinically important activity in HER2-low breast cancer and is used after appropriate endocrine therapy in HR-positive disease. HER2-low is a therapeutic category distinct from classic HER2-amplified disease and expands the population benefiting from HER2-directed antibody-drug conjugates.
- 118. B.** Ramucirumab plus paclitaxel is a standard second-line regimen for advanced gastric or GEJ adenocarcinoma. The combination targets angiogenesis and cytotoxic sensitivity in this disease and is distinct from regimens used for lymphoma, germ-cell cancer, breast cancer, or AML.
- 119. A.** Belzutifan inhibits HIF-2alpha, a central downstream consequence of VHL loss, and is used for selected VHL-associated tumors that do not require immediate surgery. Anemia and hypoxia are important treatment toxicities.
- 120. C.** For PD-L1-positive persistent, recurrent, or metastatic cervical cancer, pembrolizumab combined with platinum-taxane chemotherapy, with or without bevacizumab based on suitability, improves survival. Biomarker and bleeding/fistula risks should guide treatment.
- 121. E.** CLL can be complicated by warm autoimmune hemolytic anemia. Corticosteroids are standard initial therapy for clinically significant warm AIHA, while management of the underlying CLL may also be needed in selected cases. Iron, phlebotomy, and vitamin K do not treat immune red-cell destruction.
- 122. A.** Doxorubicin remains a core first-line systemic therapy for many advanced soft-tissue sarcomas. Combination therapy may increase response rate when tumor shrinkage is especially important but usually adds toxicity without a consistent overall-survival advantage.
- 123. D.** For high-risk early triple-negative breast cancer, pembrolizumab combined with neoadjuvant chemotherapy followed by adjuvant pembrolizumab improves event-free outcomes. Treatment is integrated with surgery and uses a chemotherapy backbone appropriate for triple-negative disease.
- 124. E.** Trastuzumab deruxtecan is active in previously treated HER2-positive gastric or GEJ adenocarcinoma. Interstitial lung disease, nausea, cytopenias, and cardiac function are important safety considerations.

- 125. E.** Platinum plus a taxane combined with pembrolizumab is a standard first-line regimen for metastatic squamous NSCLC without a targetable driver. Pemetrexed is not used as the chemotherapy backbone for squamous histology, and the alternative combinations target unrelated biology.
- 126. A.** Lymphedema is managed with compression, tailored exercise, skin care, and specialized therapy. Routine diuresis does not correct impaired lymphatic drainage, and inactivity can worsen function; antibiotics are reserved for infection rather than chronic prophylaxis in most patients.
- 127. C.** BRAF V600E-mutant anaplastic thyroid carcinoma is highly aggressive but can respond dramatically to combined BRAF and MEK inhibition with dabrafenib and trametinib. Rapid molecular testing is therefore essential at diagnosis.
- 128. A.** Testing many hypotheses increases the chance that at least one will appear significant by chance. Prespecified hierarchical testing or multiplicity adjustment can control type I error. Multiplicity does not itself destroy randomization or guarantee false-negative results.
- 129. E.** Richter transformation should be suspected when CLL suddenly becomes clinically aggressive with rapid nodal growth, systemic symptoms, and high LDH. Tissue biopsy of a highly suspicious site is required because management and prognosis differ substantially from ordinary CLL progression.
- 130. C.** Checkpoint inhibitors can cause acute interstitial nephritis. After excluding common alternative causes, clinically significant immune-mediated nephritis is managed by holding the checkpoint inhibitor and using corticosteroids according to severity, with nephrology input when needed.
- 131. A.** PD-L1-positive metastatic triple-negative breast cancer is appropriately treated with pembrolizumab plus chemotherapy. Biomarker status matters because endocrine and HER2-directed therapies do not benefit truly triple-negative disease without their respective targets.
- 132. E.** First-line immunochemotherapy improves survival in advanced esophageal squamous-cell carcinoma, with regimen selection influenced by PD-L1 expression and regional approvals. Histology matters because treatment differs from HER2-positive adenocarcinoma or localized disease.
- 133. B.** Consolidation durvalumab after definitive concurrent chemoradiation improves outcomes in unresectable stage III NSCLC for appropriate patients without progression. Prophylactic cranial irradiation is a small-cell strategy, and the targeted drugs listed are not indicated without their specific molecular context.
- 134. E.** After reversible causes are assessed, regular exercise is among the most consistently beneficial interventions for cancer-related fatigue. Prolonged inactivity can worsen deconditioning, while corticosteroids and stimulants are not routine first-line approaches for survivorship fatigue.
- 135. D.** Gemcitabine-docetaxel is an active regimen in leiomyosarcoma and is commonly used in advanced disease. Other options include trabectedin, pazopanib, and selected single agents depending on prior treatment, tumor site, and patient factors.

136. B. DLBCL is an aggressive but potentially curable B-cell lymphoma and requires curative-intent multiagent chemoimmunotherapy. Rituximab combined with an anthracycline-containing backbone remains central, with contemporary regimen selection based on clinical features. Single-agent or unrelated targeted therapies are inadequate as universal frontline treatment.

137. A. High-risk non-muscle-invasive bladder cancer is treated with intravesical BCG after adequate resection, often with maintenance. Early cystectomy is discussed for very high-risk features or refractory disease. Observation alone carries an unacceptable progression risk in typical high-grade T1/CIS disease.

138. B. Tisotumab vedotin targets tissue factor and is an established option for recurrent or metastatic cervical cancer after prior systemic therapy. Ocular toxicity, bleeding, and neuropathy require preventive measures and monitoring.

139. D. Germline BRCA1 or BRCA2 pathogenic variants create homologous-recombination repair deficiency that can confer sensitivity to PARP inhibition. Olaparib and talazoparib are established options in appropriate HER2-negative metastatic breast cancer.

140. C. Adjuvant nivolumab is standard for patients with residual pathologic disease after neoadjuvant chemoradiation and complete resection of esophageal or GEJ cancer. Patients who achieve a pathologic complete response do not meet this specific indication.

141. A. For selected resectable stage II to III NSCLC without contraindications, neoadjuvant or perioperative chemoimmunotherapy improves pathologic and event-free outcomes and is integrated with surgery. Treatment must be individualized by stage, resectability, histology, biomarkers, and multidisciplinary assessment.

142. E. Selective RET inhibitors such as selpercatinib are highly active in RET-mutant medullary thyroid carcinoma. Germline RET testing is also important because hereditary disease may indicate MEN2 and has implications for relatives.

143. B. Differences in significance between subgroups do not establish a difference in treatment effect. A treatment-by-subgroup interaction test directly evaluates heterogeneity of effect, and prespecification reduces the risk that an apparent subgroup result is a chance finding.

144. E. Effective prognostic communication begins by assessing the patient's information preferences, then sharing an understandable estimate while acknowledging uncertainty. Ranges and best-case/worst-case framing can support planning. False precision, avoidance, or excluding a capable patient undermines informed decision making.

145. E. For large B-cell lymphoma that is primary refractory or relapses early after first-line therapy, randomized trials established CD19-directed CAR T-cell therapy as a preferred second-line strategy for eligible patients. Traditional salvage chemotherapy and autologous transplantation remain important in later relapses or selected circumstances.

- 146. C.** Pembrolizumab is an option for selected patients with BCG-unresponsive high-risk non-muscle-invasive bladder cancer with carcinoma in situ who are ineligible for or decline cystectomy. Other bladder-preserving options include gene therapy or intravesical approaches, but cystectomy remains the oncologic standard for many fit patients with refractory high-risk disease.
- 147. E.** One year of adjuvant olaparib improves invasive disease-free and overall survival in appropriately selected patients with high-risk, HER2-negative early breast cancer and a germline BRCA1/2 pathogenic variant. The other targeted drugs address unrelated pathways.
- 148. D.** Adjuvant modified FOLFIRINOX is preferred for many fit patients after complete resection of pancreatic adenocarcinoma. Gemcitabine-based therapy remains appropriate for patients who cannot tolerate FOLFIRINOX, and treatment should begin after adequate postoperative recovery.
- 149. D.** Eribulin improves survival compared with dacarbazine in previously treated liposarcoma and is an established later-line option. Trabectedin is another active agent, particularly in liposarcoma and leiomyosarcoma.
- 150. E.** Adjuvant osimertinib substantially reduces recurrence risk in resected EGFR-mutant NSCLC with common sensitizing mutations and is standard after surgery with or without indicated chemotherapy. The other drugs target different molecular pathways.
- 151. B.** Asymptomatic advanced-stage follicular lymphoma with low tumor burden can be safely observed until a treatment indication develops. Immediate therapy may delay progression but has not historically improved overall survival in this setting, and unnecessary treatment adds toxicity.
- 152. E.** A statement like this often reflects fear, grief, or concern about abandonment. The clinician should respond empathically, emphasize continued care and symptom management, and then explore goals and realistic options. Unfounded reassurance or rapid technical redirection can impair communication.
- 153. B.** Cisplatin-based neoadjuvant combination chemotherapy before cystectomy improves survival in muscle-invasive bladder cancer. Trimodality bladder preservation is an alternative for carefully selected patients, but intravesical BCG alone is inadequate for muscle-invasive disease.
- 154. C.** For hormone receptor-positive DCIS, endocrine therapy can reduce new ipsilateral and contralateral breast events after local treatment. It does not provide a demonstrated survival advantage for DCIS and should be individualized according to menopausal status, toxicity, and patient preferences.
- 155. C.** Fit patients with metastatic pancreatic adenocarcinoma benefit from intensive multiagent chemotherapy such as FOLFIRINOX; NALIRIFOX is another contemporary option. Gemcitabine-nab-paclitaxel remains appropriate in many patients depending on performance status and comorbidities.

- 156. A.** Adding a PD-1 checkpoint inhibitor to carboplatin-paclitaxel markedly improves outcomes in advanced or recurrent endometrial cancer, with especially large benefit in dMMR/MSI-H tumors. Maintenance checkpoint therapy is continued according to the regimen used.
- 157. D.** The Stupp regimen—focal radiation with concurrent temozolomide followed by adjuvant temozolomide—is the standard postoperative backbone for fit patients with newly diagnosed glioblastoma. Tumor-treating fields can also be discussed during maintenance in appropriate patients.
- 158. D.** A surrogate endpoint can be clinically useful, but surrogacy is context specific and requires empirical validation. Disease-free survival is not automatically equivalent to overall survival, quality of life, or net clinical benefit, so toxicity and later outcomes remain important.
- 159. A.** Stereotactic body radiation therapy is a standard curative-intent option for medically inoperable early-stage NSCLC and provides excellent local control. The other approaches do not appropriately treat a localized primary lung tumor.
- 160. E.** Mantle cell lymphoma characteristically overexpresses cyclin D1 because of the t(11;14) translocation and typically expresses B-cell markers with CD5. Follicular lymphoma is more commonly associated with BCL2 rearrangement, while classical Hodgkin and NK/T-cell lymphomas have different immunophenotypes.
- 161. D.** Classic LCIS is primarily a risk marker for future breast cancer in either breast rather than an obligate invasive precursor requiring chemotherapy. Management includes risk assessment, enhanced surveillance, and discussion of endocrine risk reduction; surgery is individualized rather than mandatory.
- 162. E.** For germline BRCA-mutated metastatic pancreatic cancer that has not progressed after a sufficient course of platinum chemotherapy, maintenance olaparib can prolong progression-free survival. Germline testing is therefore clinically relevant in all patients with pancreatic adenocarcinoma.
- 163. B.** Enfortumab vedotin plus pembrolizumab has become a preferred first-line standard for advanced urothelial carcinoma based on major improvements in progression-free and overall survival. Toxicities include rash, neuropathy, hyperglycemia, and immune-related adverse events.
- 164. E.** A capable adult patient's informed choices guide medical care, including decisions about resuscitation. Surrogates make decisions only when the patient lacks capacity and should then use substituted judgment or the patient's known values.
- 165. B.** Localized osteosarcoma is treated with perioperative multiagent chemotherapy and complete surgical resection. The MAP regimen—high-dose methotrexate, doxorubicin, and cisplatin—is a standard backbone in younger patients.
- 166. A.** Bleomycin can cause potentially serious interstitial pneumonitis and pulmonary fibrosis. New compatible respiratory symptoms during ABVD warrant prompt evaluation and discontinuation of

bleomycin when drug toxicity is suspected. The other ABVD components have different dominant toxicity profiles.

167. A. First-line treatment of extensive-stage small-cell lung cancer combines platinum-etoposide chemotherapy with a PD-L1 inhibitor such as atezolizumab or durvalumab, followed by immunotherapy maintenance. The alternative regimens target unrelated malignancies.

168. D. Nonmetastatic inflammatory breast cancer requires multimodality treatment beginning with systemic therapy appropriate to tumor subtype, followed by mastectomy with axillary management and radiation. Breast-conserving surgery alone is not standard because of the diffuse dermal lymphatic involvement.

169. B. MSI-H/dMMR is uncommon in pancreatic adenocarcinoma but is therapeutically important because it predicts sensitivity to PD-1 blockade. This illustrates why broad molecular testing can identify rare but actionable biomarkers in advanced disease.

170. B. Erdafitinib is an oral FGFR inhibitor used for susceptible FGFR3-altered advanced urothelial cancer in an appropriate treatment setting. Hyperphosphatemia and ocular toxicity require monitoring. The other agents target EGFR, RET, IDH1, or estrogen receptor.

171. E. Hospice is appropriate when care goals prioritize comfort and prognosis is limited under the applicable program criteria. It provides interdisciplinary symptom management and support rather than abandonment; hospice does not require stopping medications that contribute to comfort.

172. B. MGMT repairs alkylator-induced DNA lesions. Promoter methylation lowers MGMT expression and predicts greater benefit from temozolomide, especially relevant when treatment intensity must be individualized in older or frail patients.

173. B. When control-arm patients later receive an effective experimental therapy, the randomized groups become more similar with respect to postprogression treatment. This can dilute an overall-survival difference even when earlier endpoints such as progression-free survival remain informative.

174. A. Active myeloma can be diagnosed not only by CRAB end-organ damage but also by validated myeloma-defining biomarkers associated with a very high risk of progression, including an involved/uninvolved free-light-chain ratio of at least 100 when the involved chain meets the required concentration. A marrow plasma-cell percentage of 15% also exceeds the MGUS range.

175. A. Loss of MLH1/PMS2 can result from germline Lynch syndrome or, more commonly, sporadic MLH1 promoter methylation. Tumor methylation testing helps triage which patients require germline evaluation for Lynch syndrome.

176. B. Consolidation durvalumab after definitive concurrent chemoradiation improves survival in limited-stage small-cell lung cancer and is a contemporary standard for eligible patients. The other agents have no established role in this disease.

177. A. Most male breast cancers are hormone receptor positive, and tamoxifen is the preferred adjuvant endocrine therapy for many patients. If an aromatase inhibitor is used, gonadal suppression is generally needed because testicular estrogen production persists.

178. D. Gemcitabine-cisplatin combined with durvalumab is a standard first-line treatment for advanced biliary tract cancer. Molecular profiling should also be performed because cholangiocarcinoma can harbor actionable FGFR2, IDH1, HER2, BRAF, MSI-H, and other alterations.

179. D. Ewing sarcoma requires intensive systemic chemotherapy integrated with local surgery and/or radiation. Interval-compressed VDC alternating with IE is a standard curative regimen and addresses the high risk of occult micrometastatic disease.

180. A. For patients whose metastatic urothelial cancer has not progressed after first-line platinum chemotherapy, switch-maintenance avelumab improves overall survival. This remains relevant for patients treated with a platinum-first strategy, even as newer first-line standards have changed treatment sequencing.

181. B. Proportionate palliative sedation can be considered for intolerable refractory symptoms near the end of life when standard measures have failed and goals are carefully discussed. The intent is relief of suffering using the minimum sedation necessary, which is ethically distinct from intentionally causing death.

182. A. For many transplant-eligible patients with newly diagnosed myeloma, a CD38-antibody-containing quadruplet such as daratumumab-VRd is a contemporary induction standard, followed by stem-cell collection and consideration of autologous transplantation. The alternative regimens treat other hematologic malignancies or are inadequate for fit newly diagnosed myeloma.

183. D. Selected anthracycline-based chemotherapy can be administered after the first trimester when maternal treatment is necessary. Trastuzumab is generally avoided during pregnancy because of fetal renal effects and oligohydramnios, while methotrexate is teratogenic and radiation is usually deferred.

184. A. FGFR2 fusions are actionable in previously treated intrahepatic cholangiocarcinoma. Selective FGFR inhibitors can produce meaningful responses, with monitoring for hyperphosphatemia, ocular toxicity, and other class effects.

185. A. Nivolumab plus ipilimumab is an established first-line treatment for unresectable malignant pleural mesothelioma and has shown particular benefit in non-epithelioid histology. Platinum-pemetrexed-based therapy is another important option, but the listed targeted alternatives are not standard mesothelioma therapy.

186. D. Nephroureterectomy removes a renal unit and commonly reduces kidney function. Delivering cisplatin-based chemotherapy before surgery can therefore preserve access to the most effective platinum when a patient is currently eligible.

- 187. C.** Vorasidenib inhibits mutant IDH1 and IDH2 and prolongs progression-free survival in selected patients with grade 2 IDH-mutant glioma after surgery who have not yet received radiation or chemotherapy. It can delay the need for more toxic local and systemic treatment.
- 188. B.** Decision-making capacity is task specific and is demonstrated by the ability to understand relevant information, appreciate consequences, reason about options, and communicate a choice. Serious illness does not by itself remove capacity or justify withholding material information.
- 189. B.** A confirmed proximal DVT in a patient with cancer generally requires therapeutic anticoagulation unless bleeding risk or another contraindication precludes it. Choice among a direct oral anticoagulant and low-molecular-weight heparin depends on bleeding risk, drug interactions, renal function, and tumor site. Filters are reserved for selected patients who cannot receive anticoagulation.
- 190. D.** Lenalidomide maintenance after autologous transplantation prolongs progression-free survival and, in many analyses, overall survival in multiple myeloma. Risk-adapted maintenance can differ for high-risk disease, but the alternatives listed do not target typical plasma-cell myeloma biology.
- 191. D.** Nirogacestat inhibits gamma secretase and improves progression-free survival, response, and symptoms in progressing desmoid tumors. Observation remains appropriate for many stable or minimally symptomatic desmoids, because spontaneous stabilization or regression can occur.
- 192. C.** Bisphosphonates such as zoledronic acid and the RANK-ligand inhibitor denosumab reduce pathologic fractures and other skeletal-related events in patients with breast-cancer bone metastases. Dental evaluation and attention to renal function, calcium, and osteonecrosis risk are important.
- 193. E.** Ivosidenib inhibits mutant IDH1 and is an established option for previously treated IDH1-mutated cholangiocarcinoma. This molecular subset underscores the importance of genomic profiling in advanced biliary tract cancers.
- 194. C.** Asbestos exposure is strongly associated with malignant pleural mesothelioma, often after a latency of decades. Asbestos also increases lung-cancer risk, but diffuse pleural disease and recurrent pleural effusion are classic for mesothelioma.
- 195. B.** HER2 is overexpressed or amplified in a subset of uterine serous carcinomas. Adding trastuzumab to carboplatin-paclitaxel improves outcomes in HER2-positive advanced or recurrent disease.
- 196. E.** Stage I seminoma is highly curable, and surveillance avoids overtreatment for the majority who are cured by orchiectomy alone. Adjuvant carboplatin or radiation may be considered in selected circumstances, but reliable surveillance is a preferred strategy for many patients.
- 197. E.** BCMA is highly expressed on malignant plasma cells and is targeted by both CAR T-cell therapies and bispecific antibodies in relapsed or refractory myeloma. The other targeted therapies are designed for unrelated solid-tumor pathways.

198. C. Primary G-CSF prophylaxis is recommended when the regimen-associated risk of febrile neutropenia is high and can also be appropriate at intermediate risk with patient-specific risk factors. Waiting for a prior episode forfeits the preventive benefit when baseline risk already exceeds the usual threshold.

199. D. HER2-directed therapy can cause potentially reversible cardiac dysfunction. A significant ejection-fraction decline warrants treatment interruption according to protocol and cardiac evaluation, with guideline-directed therapy and reassessment. Many patients can later resume HER2 therapy after recovery through coordinated cardio-oncology care.

200. B. Atezolizumab plus bevacizumab is a major first-line option for advanced HCC, but bevacizumab increases bleeding risk. Patients with cirrhosis should undergo appropriate assessment and treatment of high-risk varices before anti-VEGF therapy.

201. C. Thymoma is classically associated with myasthenia gravis, which causes fatigable ocular, bulbar, or generalized weakness. The combination of an anterior mediastinal mass and fatigable ptosis strongly supports this association.

202. B. For high-risk or grade 3 oligodendroglioma with IDH mutation and 1p/19q codeletion, radiation followed by or combined with PCV chemotherapy has demonstrated durable overall-survival benefit. Molecular classification is essential because it predicts biology and treatment responsiveness.

203. E. Tumor sequencing can uncover variants that may be somatic or germline. When the finding has hereditary implications, the patient should be counseled and offered confirmatory germline testing before relatives are managed as carriers. Tumor allele fraction alone does not establish germline status.

204. E. Cisplatin-based combination chemotherapy cures a substantial proportion of metastatic germ-cell tumors, and BEP is a standard regimen. Risk group and bleomycin suitability determine the number of cycles and whether an alternative such as VIP is used.

205. D. The COL1A1::PDGFB fusion drives PDGFR signaling in dermatofibrosarcoma protuberans. Imatinib can produce meaningful responses in unresectable, recurrent, or metastatic fusion-positive disease and may facilitate surgery.

206. B. Age over 60 years and prior thrombosis define high thrombotic risk in polycythemia vera. Management includes hematocrit control with phlebotomy, low-dose aspirin when not contraindicated, and cytoreduction such as hydroxyurea or interferon in appropriate patients.

207. E. Endocrine-based therapy is preferred for most HR-positive metastatic breast cancer, but true visceral crisis means severe organ dysfunction requiring a therapy likely to produce rapid tumor shrinkage. This is different from simply having visceral metastases without organ compromise.

- 208. C.** The STRIDE regimen of a single priming dose of tremelimumab plus durvalumab is an established first-line option for unresectable HCC and avoids anti-VEGF therapy. Regimen choice depends on liver function, autoimmune history, bleeding risk, and comorbidity.
- 209. C.** Highly emetogenic chemotherapy warrants combination prophylaxis targeting multiple emetic pathways. An NK1 antagonist, 5-HT3 antagonist, dexamethasone, and olanzapine provides superior prevention compared with single-agent or rescue-only strategies.
- 210. E.** SVC syndrome is not automatically an indication for immediate radiation when the patient is clinically stable. Because lymphoma, small-cell cancer, NSCLC, and other processes require different therapy, tissue diagnosis should be obtained promptly before definitive treatment whenever airway, cerebral, or cardiovascular compromise does not mandate emergency intervention.
- 211. A.** Pure seminoma does not produce alpha-fetoprotein. A convincingly elevated AFP in a patient with a germ-cell tumor indicates a nonseminomatous component or another cause and, when attributable to the tumor, the cancer is managed as nonseminoma.
- 212. A.** Low-risk gestational trophoblastic neoplasia is highly curable with single-agent chemotherapy, typically methotrexate or actinomycin D. hCG is followed to normalization and during surveillance; multiagent therapy is reserved for resistant or high-risk disease.
- 213. D.** Extreme thrombocytosis can cause loss of high-molecular-weight von Willebrand factor multimers and acquired von Willebrand syndrome, producing paradoxical bleeding. This is important before prescribing aspirin in a patient with very high platelet counts and bleeding symptoms.
- 214. E.** BRCA1 is a tumor-suppressor gene involved in homologous-recombination DNA repair. Pathogenic germline variants substantially increase breast and ovarian cancer risk and have implications for screening, risk-reducing surgery, family testing, and therapy if cancer develops.
- 215. D.** Classic Milan criteria include a single HCC up to 5 cm or up to three lesions each no larger than 3 cm without macrovascular invasion or metastases. Transplantation can cure both early HCC and the underlying cirrhotic liver disease in appropriately selected patients.
- 216. B.** New moderate-to-severe diarrhea during checkpoint inhibition with infection excluded should raise concern for immune-mediated colitis. Severity grading guides treatment, often including holding immunotherapy and systemic corticosteroids for clinically significant disease.
- 217. E.** High-dose methotrexate is the backbone of induction for primary CNS lymphoma because it achieves therapeutic CNS concentrations. Rituximab and other agents are often combined, and consolidation depends on age, response, and fitness.
- 218. A.** Repeated interim testing can increase false-positive probability unless the statistical plan accounts for multiple looks at the data. Prespecified stopping rules control this error. Early stopping may

still yield an imprecise or somewhat exaggerated effect estimate and does not replace consent or safety oversight.

219. A. Small-cell lung carcinoma can ectopically produce antidiuretic hormone and cause the syndrome of inappropriate antidiuresis. The biochemical pattern is hypotonic euvolemic hyponatremia with urine that is not appropriately dilute.

220. B. Cancer of unknown primary includes favorable clinicopathologic subsets that should be treated according to the most likely tissue of origin. Isolated axillary adenocarcinoma with a breast immunophenotype in a woman is managed as occult breast cancer rather than with nonspecific empiric therapy.

221. E. A suspicious solid intratesticular mass is managed with radical inguinal orchiectomy, which provides diagnosis and local control while preserving lymphatic staging principles. Transscrotal biopsy or surgery can alter lymphatic drainage and is avoided when testicular cancer is suspected.

222. C. JAK inhibitors such as ruxolitinib reduce splenomegaly and constitutional symptoms in myelofibrosis by suppressing dysregulated JAK-STAT signaling. They are not necessarily curative; allogeneic transplantation remains the only potentially curative option for selected fit patients.

223. D. PIK3CA encodes the alpha catalytic subunit of phosphatidylinositol 3-kinase. Activating mutations stimulate PI3K-AKT-mTOR signaling, creating a therapeutic vulnerability to pathway inhibitors in selected HR-positive, HER2-negative advanced breast cancers.

224. B. Most KIT-mutant GISTs are highly sensitive to imatinib, which is standard first-line treatment for unresectable or metastatic disease. Mutation testing matters because sensitivity and dosing differ by genotype, and PDGFRA D842V requires a different targeted approach.

225. C. Anatomic or functional asplenia increases the risk of severe infection, particularly from encapsulated bacteria. Survivorship care includes appropriate pneumococcal, meningococcal, Haemophilus influenzae type b, and routine vaccines according to current schedules, plus education about prompt evaluation of fever.

226. E. Squamous cell carcinomas can secrete PTH-related peptide, which activates PTH receptors and promotes renal calcium retention and bone resorption, producing humoral hypercalcemia with suppressed native PTH. This differs from primary hyperparathyroidism, where intact PTH is elevated.

227. E. Bulky or fixed regional nodal penile cancer can be treated with neoadjuvant cisplatin-based combination chemotherapy, commonly paclitaxel-ifosfamide-cisplatin, followed by consolidative lymph-node surgery in responders. This strategy addresses micrometastatic and bulky nodal disease before major surgery.

228. C. Secondary HLH can complicate hematologic malignancy and causes a hyperinflammatory syndrome with fever, organomegaly, cytopenias, liver abnormalities, hypertriglyceridemia or

hypofibrinogenemia, and often striking hyperferritinemia. Prompt recognition is important because management requires treating the inflammatory syndrome and the underlying trigger.

229. B. HER2 IHC 2+ is equivocal for classic HER2 positivity and should be resolved with in situ hybridization according to current testing algorithms. This distinguishes amplified HER2-positive disease from HER2-low nonamplified disease, which has different therapeutic implications.

230. B. Somatostatin analogues control hormone-mediated symptoms and slow tumor growth in many well-differentiated somatostatin-receptor-positive midgut NETs. More intensive approaches are reserved for progressive, bulky, or higher-grade disease.

231. C. High-risk gestational trophoblastic neoplasia requires multiagent curative-intent chemotherapy, classically EMA-CO, with treatment at an experienced center. Despite metastatic disease, cure rates can be high with appropriate combination therapy and careful hCG monitoring.

232. E. Stereotactic radiosurgery provides high local control for a limited number of small brain metastases while reducing neurocognitive exposure compared with routine whole-brain radiation. Management also integrates systemic therapy with CNS activity and disease-specific prognosis.

233. B. Ethically acceptable randomized trials require genuine uncertainty about the comparative merits of the study strategies and protection from avoidable harm. A placebo can be appropriate when no proven therapy exists or when added to standard care, but replacing an effective life-prolonging therapy with placebo alone generally violates equipoise.

234. E. The evaluation of cancer of unknown primary begins with adequate tissue and a focused diagnostic strategy. Histology, immunohistochemistry, clinical distribution, and increasingly molecular testing can identify a treatable lineage or actionable alteration, while indiscriminate testing can create false leads.

235. B. Marked somnolence, miosis, and bradypnea after opioid escalation are classic for opioid toxicity and require immediate airway assessment, supportive care, dose adjustment, and carefully titrated naloxone when indicated. In an opioid-tolerant patient, naloxone should be titrated to restore ventilation while avoiding abrupt severe pain and withdrawal.

236. A. For a limited number of small brain metastases, stereotactic radiosurgery provides high local control while reducing the neurocognitive burden associated with routine whole-brain radiation. Choice also depends on symptoms, size, location, systemic disease, and available CNS-active systemic therapy.

237. E. ADT accelerates bone loss and increases fracture risk. Baseline and follow-up risk assessment, weight-bearing and resistance exercise, adequate calcium and vitamin D, and bisphosphonate or denosumab therapy for patients meeting osteoporosis or high-risk thresholds are important components of care.

238. A. Monoclonal light chains can form amyloid deposits in the heart, kidneys, soft tissues, nerves, and other organs. Macroglossia and periorbital purpura are particularly suggestive of AL amyloidosis in a patient with a plasma-cell disorder.

239. B. Sentinel lymph-node biopsy samples the first draining axillary nodes and provides staging with less lymphedema and shoulder morbidity than routine full axillary dissection. The need for any axillary surgery can be omitted in selected older low-risk patients, but routine full dissection is unnecessary for clinically node-negative disease.

240. A. Lutetium-177-dotatate binds somatostatin receptors and delivers beta radiation to receptor-positive neuroendocrine tumor cells. It is an important option for progressive well-differentiated NETs with sufficient receptor expression and organ reserve.