

Genitourinary Radiation Oncology

10 High-Yield Board-Style Practice Questions

Original board-style practice questions for radiation oncology residents, written in ABR single-best-answer format with detailed rationales. These are original questions created for educational review and are not reproductions of actual ABR examination content.

Question 1

Which imaging approach is increasingly preferred for metastatic staging in patients with unfavorable intermediate-, high-, or very-high-risk prostate cancer when available?

- A. PSMA PET/CT or PSMA PET/MRI; conventional CT and bone scan remain alternatives or complementary studies in selected settings
- B. Barium enema
- C. Mammography only
- D. Upper endoscopy
- E. No imaging is used for distant staging in prostate cancer

Answer: A. PSMA PET/CT or PSMA PET/MRI; conventional CT and bone scan remain alternatives or complementary studies in selected settings

Rationale: PSMA PET has substantially greater sensitivity than conventional CT and bone scintigraphy for detecting nodal and distant metastatic prostate cancer and is increasingly used for initial staging of unfavorable intermediate- and higher-risk disease when available. Conventional CT and bone scan remain alternatives or complementary studies in selected clinical settings. PSMA PET is also an established imaging modality for localization of recurrent prostate cancer and for determining eligibility for PSMA-targeted radioligand therapy.

References:

Fendler WP, Eiber M, Beheshti M, et al. PSMA PET/CT: joint EANM procedure guideline/SNMMI procedure standard for prostate cancer imaging 2.0. *Eur J Nucl Med Mol Imaging*. 2023;50(5):1466-1486.
 Jadvar H, Calais J, Fanti S, et al. Appropriate Use Criteria for prostate-specific membrane antigen PET imaging. *J Nucl Med*. 2022;63(1):59-68.

Question 2

A 6 cm renal mass is found on imaging to extend into the renal vein without evidence of invasion beyond Gerota fascia or distant metastasis. What T category does this most likely represent?

- A. This finding is not addressed by the staging system
- B. T3a, because renal vein invasion upstages the tumor regardless of the primary tumor's size relative to T1/T2 size cutoffs
- C. T1, because the tumor is confined to the kidney based on size alone
- D. T2, because the tumor is larger than 4 cm
- E. T4 automatically

Answer: B. T3a, because renal vein invasion upstages the tumor regardless of the primary tumor's size relative to T1/T2 size cutoffs

Rationale: Renal vein or segmental renal-vein branch invasion is classified as T3a under AJCC 8th edition. T3a also includes invasion of the pelvicalyceal system and extension into perirenal and/or renal sinus fat without extension beyond Gerota fascia. Therefore, vascular and local invasive features can determine the T category independently of the primary tumor's size.

References:

Amin MB, Edge SB, Greene FL, et al., eds. *AJCC Cancer Staging Manual*. 8th ed. Springer; 2017. Kidney chapter.

Moch H, Cubilla AL, Humphrey PA, Reuter VE, Ulbright TM. The 2016 WHO classification of tumours of the urinary system and male genital organs—part A: renal, penile, and testicular tumours. *Eur Urol*. 2016;70(1):93-105.

Question 3

A patient with nonseminomatous germ cell tumor (NSGCT) has a 6 cm retroperitoneal nodal mass after orchiectomy, no nonregional nodal or visceral metastases, and normal post-orchiectomy serum tumor markers (S0). What is the most appropriate AJCC stage group?

- A. Stage IIC, reflecting N3 regional retroperitoneal nodal disease with M0 and S0
- B. Stage I
- C. Stage III because any 6 cm nodal mass represents distant metastatic disease
- D. This scenario cannot be staged
- E. Stage IS

Answer: A. Stage IIC, reflecting N3 regional retroperitoneal nodal disease with M0 and S0

Rationale: In testicular germ-cell tumors, a regional nodal mass >5 cm in greatest dimension is classified as N3. With M0 disease and normal post-orchiectomy serum tumor markers (S0), this corresponds to Stage IIC. Retroperitoneal lymph nodes are regional lymph nodes for testicular germ-cell tumors; their involvement does not by itself constitute distant metastatic disease.

References:

Amin MB, Edge SB, Greene FL, et al., eds. *AJCC Cancer Staging Manual*. 8th ed. Springer; 2017. Testis chapter.
National Cancer Institute. Testicular Cancer Treatment (PDQ®)—Health Professional Version. AJCC stage-grouping tables.

Question 4

Radiation therapy has an established contemporary role in which testicular cancer scenario?

- A. Radiation is contraindicated in seminoma because seminoma is radioresistant
- B. Definitive radiation therapy is an established option for appropriately selected stage IIA and selected low-volume stage IIB seminoma; adjuvant radiation for stage I seminoma is now used selectively because surveillance is preferred for most patients
- C. Radiation has no role in testicular cancer management under any circumstances
- D. Radiation is used only for distant bone metastases
- E. Radiation is routinely used as definitive treatment for NSGCT

Answer: B. Definitive radiation therapy is an established option for appropriately selected stage IIA and selected low-volume stage IIB seminoma; adjuvant radiation for stage I seminoma is now used selectively because surveillance is preferred for most patients

Rationale: Seminoma is highly radiosensitive. Radiation therapy remains an established definitive treatment option for appropriately selected patients with stage IIA and low-volume stage IIB seminoma. For stage IIA or IIB seminoma with lymph nodes ≤3 cm, contemporary guidance supports radiation therapy or cisplatin-based chemotherapy, with treatment individualized through shared decision-making. Chemotherapy is generally preferred for bulkier stage IIB disease. For stage I seminoma, surveillance is preferred for most patients, while adjuvant radiation is used selectively because of concern for long-term treatment effects, including second malignancies and cardiovascular toxicity.

References:

Stephenson A, Bass EB, Bixler BR, et al. Diagnosis and treatment of early-stage testicular cancer: AUA guideline amendment 2023. *J Urol*. 2024;211(1):20-25.
European Association of Urology. EAU Guidelines on Testicular Cancer. 2025. Stage IIA/B seminoma section.

Question 5

A patient with intermediate-risk localized prostate cancer is planned for definitive external-beam radiotherapy using moderate hypofractionation. Which dose/fractionation is a well-established standard regimen?

- A. 45 Gy in 25 fractions
- B. 81 Gy in 45 fractions
- C. 60 Gy in 20 fractions
- D. 36.25 Gy in 5 fractions

Answer: C. 60 Gy in 20 fractions

Rationale: Moderate hypofractionation with 60 Gy in 20 fractions is a well-established standard regimen for localized prostate cancer. In the randomized phase III CHHiP trial, 60 Gy in 20 fractions was noninferior to conventional fractionation with 74 Gy in 37 fractions for biochemical or clinical failure, with broadly comparable long-term toxicity. Moderate hypofractionation is therefore an accepted standard approach for appropriately selected patients receiving definitive external-beam radiation therapy.

Reference:

Dearnaley D, Syndikus I, Mossop H, et al. Conventional versus hypofractionated high-dose intensity-modulated radiotherapy for prostate cancer: 5-year outcomes of the randomized, non-inferiority, phase 3 CHHiP trial. *Lancet Oncol.* 2016;17(8):1047-1060.

Question 6

A patient with low-risk localized prostate cancer is treated with stereotactic body radiation therapy (SBRT). Which dose/fractionation is a commonly used ultra-hypofractionated regimen, and which randomized trial demonstrated its noninferiority?

- A. 70 Gy in 35 fractions
- B. 50 Gy in 20 fractions
- C. 20 Gy in 2 fractions
- D. 36.25 Gy in 5 fractions, as tested in the PACE-B trial

Answer: D. 36.25 Gy in 5 fractions, as tested in the PACE-B trial

Rationale: PACE-B evaluated 36.25 Gy in 5 fractions delivered over 1–2 weeks against conventional or moderately hypofractionated radiotherapy in men with low- or intermediate-risk localized prostate cancer. At a median follow-up of approximately 74 months, 5-year freedom from biochemical or clinical failure was 95.8% with SBRT versus 94.6% with control radiotherapy, meeting the prespecified criterion for noninferiority. Late grade ≥ 2 genitourinary toxicity was higher with SBRT, whereas late gastrointestinal toxicity was similar. Thus, five-fraction SBRT is an evidence-based definitive treatment option for appropriately selected patients with localized prostate cancer.

Reference:

van As N, Griffin C, Tree A, et al. Phase 3 trial of stereotactic body radiotherapy in localized prostate cancer. *N Engl J Med.* 2024;391(15):1413-1425.

Question 7

A patient with muscle-invasive bladder cancer who elects bladder preservation undergoes trimodality therapy. What does this treatment approach typically consist of?

- A. Radiation therapy alone without chemotherapy or maximal transurethral resection
- B. Radical cystectomy followed by adjuvant radiation therapy
- C. Maximal transurethral resection of bladder tumor (TURBT) followed by concurrent chemoradiation and subsequent cystoscopic surveillance
- D. Neoadjuvant chemotherapy alone without radiation or surgery

Answer: C. Maximal transurethral resection of bladder tumor (TURBT) followed by concurrent chemoradiation and subsequent cystoscopic surveillance

Rationale: Bladder-preserving trimodality therapy consists of maximal TURBT followed by concurrent radiosensitizing chemotherapy and external-beam radiation therapy, followed by planned cystoscopic surveillance. Maximal resection of visible tumor before chemoradiation is an important component of the approach. Patients require careful long-term surveillance, and salvage cystectomy remains an important option for medically fit patients who develop persistent or recurrent muscle-invasive disease.

Reference:

Holzbeierlein J, Bixler BR, Buckley DI, et al. Treatment of non-metastatic muscle-invasive bladder cancer: AUA/ASCO/SUO guideline (2017; amended 2020 and 2024). *J Urol*. 2024;212(1):3-10.

Question 8

When treating the prostate bed with postoperative radiation therapy after radical prostatectomy, which imaging and positioning strategy is most appropriate for managing day-to-day changes caused by bladder and rectal filling?

- A. Treat using skin marks alone without image guidance
- B. Use a uniform 3-cm PTV margin in all directions
- C. Treat only once weekly to minimize interfraction variation
- D. Use frequent image guidance, preferably daily cone-beam CT or another appropriate soft-tissue localization technique, together with standardized bladder-filling and rectal-emptying protocols

Answer: D. Use frequent image guidance, preferably daily cone-beam CT or another appropriate soft-tissue localization technique, together with standardized bladder-filling and rectal-emptying protocols

Rationale: Postoperative prostate-bed anatomy can vary substantially with bladder and rectal filling, making image guidance important for accurate target localization. ESTRO-ACROP consensus identifies CBCT as the preferred IGRT method, ideally performed daily or at a minimum three times weekly, with alignment to soft tissue and/or surgical clips rather than bony anatomy alone. A reproducible preparation protocol using a comfortably full bladder and consistently empty rectum is recommended because variations in bladder and rectal filling can have a greater impact on prostate-bed position after prostatectomy than during treatment of an intact prostate.

Reference:

Dal Pra A, Dirix P, Khoo V, et al. ESTRO ACROP guideline on prostate bed delineation for postoperative radiotherapy in prostate cancer. *Clin Transl Radiat Oncol*. 2023;41:100638.

Question 9

The phase III FLAME trial randomized patients with intermediate- and high-risk localized prostate cancer to standard external-beam radiotherapy to the whole prostate versus the same treatment with a simultaneous integrated focal boost of up to 95 Gy to the MRI-visible intraprostatic tumor. What did long-term follow-up demonstrate?

- A. The focal boost resulted in significantly worse biochemical disease-free survival because of excess toxicity
- B. MRI-guided focal dose escalation produced a sustained improvement in biochemical disease-free survival compared with standard whole-prostate radiotherapy
- C. There was no difference in biochemical disease-free survival between the two treatment approaches
- D. The trial was stopped early because focal boosting caused unacceptable rectal toxicity

Answer: B. MRI-guided focal dose escalation produced a sustained improvement in biochemical disease-free survival compared with standard whole-prostate radiotherapy

Rationale: Ten-year follow-up of the FLAME trial confirmed a sustained biochemical-control advantage from focal dose escalation to MRI-visible intraprostatic disease. Ten-year biochemical disease-free survival was approximately 86% with the focal boost versus 71% with standard whole-prostate radiotherapy. Significant improvements were also observed in several other disease-control endpoints, although a statistically significant improvement in distant metastasis-free survival or overall survival was not demonstrated. These results support the concept of focal dose escalation to the dominant intraprostatic lesion when appropriate treatment planning and normal-tissue constraints can be achieved.

Reference:

Menne Guricová K, Draulans C, Pos FJ, et al. Focal boost to the intraprostatic tumor in external beam radiotherapy for patients with localized prostate cancer: 10-year outcomes of the FLAME trial. *J Clin Oncol*. 2025;43(28):3065-3069.

Question 10

The phase III PSMAAddition trial evaluated adding ^{177}Lu -PSMA-617 to androgen-deprivation therapy (ADT) plus an androgen receptor pathway inhibitor (ARPI) in patients with PSMA-positive metastatic hormone-sensitive/androgen pathway modulation-naïve prostate cancer. What was the key finding?

- A. Adding ^{177}Lu -PSMA-617 significantly improved radiographic progression-free survival, supporting earlier use of PSMA-targeted radioligand therapy in appropriately selected patients
- B. ^{177}Lu -PSMA-617 was effective only after progression through multiple prior therapies
- C. Adding ^{177}Lu -PSMA-617 provided no benefit and resulted in unacceptable toxicity
- D. ^{177}Lu -PSMA-617 was equally effective regardless of PSMA expression on imaging

Answer: A. Adding ^{177}Lu -PSMA-617 significantly improved radiographic progression-free survival, supporting earlier use of PSMA-targeted radioligand therapy in appropriately selected patients

Rationale: PSMAAddition demonstrated that adding ^{177}Lu -PSMA-617 to ADT plus an ARPI significantly improved radiographic progression-free survival in patients with PSMA-positive metastatic androgen pathway modulation-naïve/sensitive prostate cancer. The reported hazard ratio for radiographic progression or death was 0.72 (95% CI, 0.58–0.90; $P=0.0021$), with median radiographic progression-free survival not reached in either treatment group at the reported interim analysis. Overall-survival data remained immature. Based on PSMAAddition, the FDA approved lutetium Lu 177 vipivotide tetraxetan in combination with ARPI therapy on July 31, 2026, for adults with PSMA-positive metastatic androgen pathway modulation-naïve/sensitive prostate cancer. This represents an important expansion of PSMA-targeted radioligand therapy into an earlier disease setting.

References:

Tagawa ST, Sartor O, Piulats JM, et al.; PSMAAddition Investigators. [^{177}Lu]Lu-PSMA-617 in patients with PSMA-positive metastatic androgen pathway modulator-naïve/sensitive prostate cancer (PSMAAddition): a phase 3 randomized controlled trial. *Lancet*. Published online August 6, 2026.

U.S. Food and Drug Administration. FDA approves lutetium Lu 177 vipivotide tetraxetan with androgen receptor pathway inhibitor therapy for metastatic androgen pathway modulation-naïve or -sensitive prostate cancer. July 31, 2026.

These are original board-style practice questions written for educational review and are not reproductions of actual ABR examination content.

© Hasan Murshed, MD, MS — drhasanmurshed.com