Pioneer Hub

Clinical guideline workflow for biomarker testing

Navigate key decision-making steps to implement biomarker-driven approaches for metastatic prostate cancer into clinical practice using these simplified, step-by-step diagrams.

This workflow presents a visual interpretation of key recommendations from the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for Prostate Cancer Version 2.2026.[1]

Please review the comprehensive recommendations and supporting evidence on biomarker testing in metastatic prostate cancer in key guidelines:

- NCCN Guidelines® for Prostate Cancer[1]
- Germline and Somatic Genomic Testing for Metastatic Prostate Cancer: ASCO Guideline[2]
- Updates to Advanced Prostate Cancer: AUA/SUO Guideline[3]

ASCO, American Society of Clinical Oncology; AUA, American Urological Association; NCCN, National Comprehensive Cancer Network; SUO, Society of Urologic Oncology.

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Patient with

metastatic hormone-sensitive prostate cancer (mHSPC)

Somatic tumor testing[a]

Germline testing[b]

No pathogenic mutation identified

Pathogenic or likely pathogenic tumor mutation identified

Multigene tumor testing for HRR gene alterations is recommended[c]

Note: Tumor testing for MSI-H (via genomic analysis) or dMMR (via immunohistochemistry) may also be considered

- May inform understanding of prognosis and risk stratification, and treatment decision-making
- Enables baseline stratification for future treatment with biomarker-directed therapies

Pathogenic or likely pathogenic germline mutation identified[d]

- May indicate an aggressive phenotype (eg, *BRCA* mutations)
- May inform understanding of prognosis and risk stratification
- Enables baseline stratification for future treatment with biomarker-directed therapies
- Prompts post-test genetic counseling and cascade testing for relatives

Non-biomarker-directed standard-of-care treatment and management strategies

While there are no FDA-approved biomarker-directed therapies following somatic tumor testing for mHSPC, key clinical guidelines incorporate somatic testing to inform treatment decision-making, including prognostic implications and eligibility for future treatment with a biomarker-directed therapy[1–3]

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dMMR, deficient mismatch repair; FDA, Food and Drug Administration; HRR, homologous recombination repair; mHSPC, metastatic hormone-sensitive prostate cancer; MSI-H, microsatellite instability-high.

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Tumor molecular profiles may change with subsequent treatments and re-evaluation may be considered at the time of cancer progression for treatment decision-making

If germline testing was done previously (see mHSPC workflow), it does not need to be repeated. Existing results can be used to guide biomarker-directed treatment decisions in the mCRPC setting

Patient with

metastatic castration-resistant prostate cancer (mCRPC)

Somatic tumor testing[a]

Germline testing[b]

No pathogenic mutation identified

Non-biomarker-directed standard-of-care treatment and management strategies

Multigene molecular testing of a tumor offers the potential of added insight into the biologic behavior of a cancer that could support clinical decision-making

Germline testing for HRR gene mutations is recommended at this stage if not performed previously

Pathogenic or likely pathogenic tumor mutation in an HRR gene[c]

Eligible for PARPi with/without an ARPI[e]

Tumor testing indicates MSI-H, dMMR, or TMB-high (tumor mutational burden ≥10 mut/Mb)[d]

Eligible for guideline recommended anti-PD1

Unfavorable genomics as indicated by defects in at least two of the following genes: *PTEN*, *TP53* and *RB1*

Informs chemotherapy treatment considerations

Pathogenic or likely pathogenic germline mutation in an HRR gene

Eligible for PARPi with/without an ARPI

Key clinical guidelines recommend germline testing (if not already performed) and somatic tumor testing in the mCRPC setting to identify predictive biomarkers that can guide patient eligibility for FDA-approved biomarker-directed therapies[1–4]

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ARPI, androgen receptor pathway inhibitor; dMMR, deficient mismatch repair; FDA, Food and Drug Administration; HRR, homologous recombination repair; mCRPC, metastatic castration-resistant prostate cancer; mHSPC, metastatic hormone sensitive prostate cancer; MSI-H, microsatellite instability-high; PARPi, poly adenosine diphosphate-ribose polymerase inhibitor; PD1, programmed death-ligand 1; PTEN, phosphatase and tensin homolog; RB1, retinoblastoma 1; TMB, tumor mutation burden; TP53, tumor protein p53.

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