Genetic education and practice considerations of non-genetic providers

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Germline testing for inherited prostate cancer is revolutionizing prostate cancer treatment for advanced and metastatic disease and is beginning to inform management for early-stage disease as well as prostate cancer screening discussions. Increasingly, non-genetic providers are performing genetic testing in their practices, necessitating focused efforts to address genetic education and working knowledge of genetic testing for responsible delivery of testing to men with or at risk for prostate cancer.

Key Words: prostate cancer, genetic testing, germline testing, provider education

Germline genetic testing is being increasingly performed for men with prostate cancer as well as men at risk for prostate cancer.[1] Multiple genes have been reported to contribute to prostate cancer with varying risk estimates such as *BRCA2*, *BRCA1*, *HOXB13*, *CHEK2*, DNA mismatch repair genes, and *ATM*.[2,3] Some of these genes, such as *BRCA2*, *BRCA1*, and *ATM*, are also associated with aggressive prostate cancer and poor outcomes.[2-5] National guidelines have significantly expanded to include germline testing for all men with metastatic prostate cancer, men with high-risk disease, men with early-stage/low-risk disease based upon pathology and family history, and Ashkenazi Jewish ancestry.[6,7] This expansion of genetic testing has led to an increasing demand for genetic counseling of men with prostate cancer, leading to difficulty with timely access to genetic testing.

Many non-genetic providers, such as urologists, oncologists, and primary care providers, have begun to perform germline testing in their own practices, raising the need to address appropriate pretest informed consent and post-test discussion and genetic recommendations for patients. A survey of prostate cancer providers in the Philadelphia region in 2017-2018 (n = 56) revealed that 14% of providers always consider genetic testing of their patients with prostate cancer, and 50% sometimes consider testing.[8] Furthermore, survey results revealed that 65% felt cancer inheritance was important to discuss, 60% discussed the types of genetic test results to expect in the pretest discussion, 55% felt it necessary to discuss the familial cancer risk implications, and 45% responded it was important to discuss the genetic discrimination laws.[8] A multi-institutional survey of academic oncologists (n = 26) revealed that 16/26 (62%) of oncologists reported taking conducting their own genetic education and testing of their patients with prostate cancer.[9] Furthermore, most of the tests ordered were comprehensive or large cancer panels.[9] Given the growth of genetic testing occurring in non-genetic practices, providers need to be aware of discussion elements for pretest informed consent for men with prostate cancer based upon best practice and as endorsed by multiple professional organizations.[10-15] Furthermore, knowledge of genetic test results, recommendations, and implications for men and their families is important for non-genetic providers to impart to their patients once genetic test results return.[1,6,7]

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Key areas of working knowledge, discussion with patients, and responsibilities of providers conducting genetic testing include:[1]

- Knowledge of cancer inheritance, genetic testing considerations, and implications of test results.
- Understanding of mutations in key genes relevant to precision therapy, precision management, and prostate cancer screening.
- Identification of men meeting criteria for genetic evaluation based upon personal and family history.
- Discussion of cancer inheritance, family history intake, genetic test options, benefits/limitations of genetic testing, types of results, GINA law.
- Understanding which lab to choose for quality and experienced genetic testing.
- Consideration of men's psychosocial needs when making a decision for genetic testing.
- Discussion of genetic results and recommendations based on test results and family history.
- Understanding of variant reclassification and follow up with patients.
- Facilitating cascade testing or further genetic evaluation for families.

Close collaboration between genetic and non-genetic providers is needed to address the genetic evaluation needs of men with prostate cancer and their families.

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