BRCA1& BRCA2 Genetic Mutation Testing and Related Genetic Counseling

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Disclaimer

Highmark Health Options medical policy is intended to serve only as a general reference resource regarding coverage for the services described. This policy does not constitute medical advice and is not intended to govern or otherwise influence medical decisions.

POLICY STATEMENT

Highmark Health Options may provide coverage under the laboratory section of its medical benefits for medically necessary BRCA testing.

This policy is designed to address medical necessity guidelines that are appropriate for the majority of individuals with a particular disease, illness or condition. Each person's unique clinical circumstances warrant individual consideration, based upon review of applicable medical records.

The qualifications of the policy will meet the standards of the National Committee for Quality Assurance (NCQA) and the Delaware Department of Health and Social Services (DHSS) and all applicable state and federal regulations.

DEFINITIONS

CHEK2 – A gene on chromosome 22q that encodes a kinase enzyme and influences a person's susceptibility to breast cancer.

Close Relative – For the purpose of familial assessment, includes first-, second- and third-degree relatives on the same side of the family (maternal or paternal).

First-Degree Relatives – Include parents, children, and siblings, and half-siblings.

Highmark Health Options (HHO) – Managed care organization serving vulnerable populations that have complex needs and qualify for Medicaid. Highmark Health Options members include individuals and families with low income, expecting mothers, children, and people with disabilities. Members pay nothing to very little for their health coverage. Highmark Health Options currently services Delaware Medicaid: Delaware Healthy Children Program (DHCP) and Diamond State Health Plan Plus LTSS (DSHP Plus LTSS) members.

Second-Degree Relatives – Include grandparents, aunts, uncles, nieces, nephews, and grandchildren.

Third-Degree Relatives – Include great-grandparents, great-aunts, great-uncles, great-grandchildren, and first cousins.

Triple–Negative Breast Cancer – The term used to describe breast cancer cells that do not have estrogen receptors, progesterone receptors, or large of amounts of HER/neu protein. Also called ER-negative PR-negative HER2/neu-negative and ER-PR-HER2/neu-negative.

POLICY POSITION

Prior authorization is required.

The following medical necessity criteria must be met:

1. Unaffected/asymptomatic individuals (women must be 18 years of age and older) without a personal history of breast cancer (both invasive breast cancer and ductal carcinoma), epithelial ovarian, fallopian tube, or primary peritoneal cancer; AND:
2. Must have a biologically related family member with a known BRCA1 or BRCA2 gene mutation/variant; OR
3. Has a first- or second-degree blood relative meeting any of the criteria outlined below; OR
    a) Diagnosed at age 45 years or younger, with or without family history; OR
    b) Diagnosed at age less than 50 years with an unknown (e.g., adopted) or limited family history; OR
    c) Diagnosed at age 50 years or younger with one or more 1st-, 2nd-, or 3rd degree close blood relatives with breast cancer at any age, and/or one or more close blood relatives with epithelial ovarian, fallopian tube, or primary peritoneal cancer at any age; OR
    d) Two breast primaries when first breast cancer diagnosis occurred prior to or at age 50 years. Two breast primaries include bilateral disease or cases where there are two or more clearly separate ipsilateral primary tumors; OR
    e) Diagnosed at age 60 years or younger with triple negative (ER-, PR-, HER2) breast cancer; OR
    f) Diagnosed at any age and with at least one 1st-, 2nd-, or 3rd- degree relative with breast cancer at age 50 or younger; OR
    g) Diagnosed at any age, with at least two 1st-, 2nd-, or 3rd degree relatives with breast cancer diagnosed at any age; OR
    h) Diagnosed at any age, with at least one 1st, 2nd-, or 3rd degree relative with epithelial ovarian, fallopian tube, or primary peritoneal cancer diagnosed at any age; OR
    i) Diagnosed at any age, with at least two 1st-, 2nd-, or 3rd degree relatives with pancreatic cancer or prostate cancer diagnosed at any age; OR
    j) Personal history male breast cancer at any age or male blood relative with breast cancer; OR
    k) For an individual or an ethnicity associated with higher mutation frequency (e.g., Ashkenazi Jewish), no additional family history required; OR
4. Has a third-degree blood relative with breast cancer and/or ovarian, fallopian tube, primary peritoneal cancer with two or more close blood relatives with breast cancer (at least one with breast cancer and ≤ 50 years of age) and/or ovarian cancer, fallopian tube, or primary peritoneal cancer.
5. Affected/symptomatic individuals (women must be 18 years of age and older) with a personal history of breast cancer (both invasive breast cancer and ductal carcinoma), epithelial ovarian, fallopian tube or primary peritoneal cancer; AND
    a) One or more of the following:
        i. Diagnosed at age 45 years or younger, with or without family history; OR
        ii. Diagnosed at age less than 50 years with an unknown (e.g., adopted) or limited family history; OR

iii. Diagnosed at age 50 years or younger with one or more 1st-, 2nd-, or 3rd degree relatives with breast cancer at any age, and/or one or more close blood relatives with epithelial ovarian, fallopian tube or primary peritoneal cancer at any age; OR
iv. Two breast primaries when first breast cancer diagnosis occurred prior to or at age 50 years. Two breast primaries include bilateral disease or cases where there are two or more clearly separate ipsilateral primary tumors; OR
v. Diagnosed at age 60 years or younger with triple negative (ER-, PR-, HER2-) breast cancer; OR
vi. Diagnosed at any age, with at least one 1st-, 2nd-, or 3rd- degree relative with breast cancer at age 50 younger; OR
vii. Diagnosed at any age, with at least two 1st-, 2nd-, or 3rd- degree relatives with breast cancer diagnosed at any age; OR
viii. Diagnosed at any age, with at least one 1st-, 2nd-, or 3rd- degree relative with epithelial ovarian, fallopian tube or primary peritoneal cancer diagnosed at any age; OR
ix. Diagnosed at any age, with at least two 1st-, 2nd-, or 3rd- degree relatives with pancreatic cancer or prostate cancer diagnosed at any age; OR
x. 1st-, 2nd-, or 3rd- degree personal history male breast cancer at any age or male relative with breast cancer; OR
xi. Personal history of epithelial ovarian, fallopian tube or primary peritoneal cancer; OR
xii. For an individual or an ethnicity associated with higher mutation frequency (e.g., Ashkenazi Jewish), no additional family history required.

a) Personal history of pancreatic cancer or prostate cancer (Gleason score ≥ 7) at any age and more than one 1st-, 2nd-, or 3rd – degree relative with any of the following:
i. Breast cancer age 50 or greater;
ii. Ovarian, fallopian tube, or primary peritoneal cancer at any age.

6. Repeat BRCA testing with an FDA-approved test (I.e., FoundationFocus) is considered medically necessary for women with ovarian cancer who had another brand of BRCA test and who are being considered for treatment with rucaparib (Rubraca) after two or more previous lines of chemotherapy
7. Large genomic rearrangement testing to identify individuals at risk for BRCA1/2 related cancers is not typically medically necessary (e.g., BARTTM). Therefore, requests for this service will require case-by-case physician review only when both sequencing and testing for common large rearrangements have been performed and are negative.

Note: Generally, genetic testing for a particular disease should be performed once per lifetime; however, there are rare instances in which testing may be performed more than once in a lifetime (e.g., previous testing methodology is inaccurate, or a new discovery has added significant relevant mutations for a disease).

GENETIC COUNSELING

Pre-test and post-test genetic counseling are considered medically necessary and are covered as an adjunct to genetic testing.

Genetic Counseling is required to be performed by an independent (not employed by a genetic testing lab) genetic provider prior to genetic counseling for BRCA mutations. This service is necessary in order to inform persons being tested about the benefits and limitations of a specific genetic test for the specific patient. Genetic testing for BRCA mutation requires documentation of medical necessity from one of the following providers who has evaluated the patient and intends to see the person after testing has been performed for counseling:

- Board Eligible or Board-Certified Genetic Counselor
- Advanced Genetics Nurse
- Genetic Clinical Nurse
- Advanced Practice Nurse in Genetics
- Board Eligible or Board-Certified Clinical Geneticist

- A physician with experience in cancer genetics

WHEN SERVICES ARE NOT COVERED

Services are not covered for conditions other than those listed above because the scientific evidence has not been established.

Genetic testing in minors for BRCA1 or BRCA mutations does not meet the definition of medical necessity. There is no change in management for minors because of knowledge of the presence or absence of a deleterious mutation. In addition, there are potential harms related to stigmatization and discrimination.

Use of the CHEK2 is considered not medically necessary because the efficacy of this test in determining an individual's risk of cancer has not yet been proven.
Genetic screening in the general population is not covered and is considered not medically necessary.

Direct- to -consumer saliva genetic testing kits for BRCA1 and BRCA2 are considered not medically necessary and therefore, not covered.

POST-PAYMENT AUDIT STATEMENT

The medical record must include documentation that reflects the medical necessity criteria and is subject to audit by Highmark Health Options at any time pursuant to the terms of your provider agreement.

PLACE OF SERVICE

The place of service for BRCA testing is outpatient.

GOVERNING BODIES APPROVAL

Genetic testing is regulated under the Clinical Laboratory Improvement Amendments (CLIA) Act of 1998. Additional information available at:
https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/IVDRegulatoryAssistance/ucm124 105.htm.

Examples of Performing Laboratories

Myriad Genetic Laboratories (Salt Lake City, UT) offers (1) Comprehensive BRAC Analysis® that includes complete sequencing of BRCA1/BRCA2 and gap polymerase chain reaction for 5 common rearrangements (deletions/duplications) in BRCA1; (2) BRAC Analysis® Large Rearrangement Test (BARTTM), which may be ordered as a reflex for patients who test negative for Comprehensive BRAC Analysis® to detect uncommon large rearrangements in BRCA1 and BRCA2; and (3) Integrated BRAC Analysis®, which includes BART as part of BRCA1/BRCA2 analysis.
Quest Diagnostics (Madison, NJ) offers BRCAvantageTM that includes sequencing of BRCA1/BRCA2 and a multiplex ligation-dependent probe amplification assay to detect both common and uncommon gene rearrangements.

LabCorp (Burlington, NC) offers the BRCAssure® suite of tests which includes targeted BRCA1/BRCA2 analysis for known BRCA1 or BRCA2 mutations; a founder mutation panel for Ashkenazi Jewish patients (3 mutations); comprehensive BRCA1/BRCA2 analysis (full gene sequencing plus analysis of common and uncommon large rearrangements); and deletion/duplication analysis of uncommon large rearrangements only (without sequencing) for use when comprehensive analysis is negative.

There are no National Coverage Determinations (NCD) for BRCA testing. There are two Novitas Solutions Local Coverage Determinations (LCD) related to BRCA testing. LCD 35396: Biomarkers for Oncology and L34796: Biomarkers Overview list medical necessity for genetic testing.

ELIGIBLE PROCEDURE CODES

CPT code	Description
81162	BRCA1 (BRCA1, DNA repair associated), BRCA2 (BRCA2, DNA repair associated) (e.g., hereditary breast and ovarian cancer) gene analysis; full sequence analysis and full duplication/deletion analysis (i.e., detection of large gene rearrangements).
81163	BRCA1 (BRCA1, DNA repair associated), BRCA2 (BRCA2, DNA repair associated) (e.g., hereditary breast and ovarian cancer) gene analysis; full sequence analysis.
81164	BRCA1 (BRCA1, DNA repair associated), BRCA2 (BRCA2, DNA repair associated) (e.g., hereditary breast and ovarian cancer) gene analysis; duplication/deletion analysis (i.e., detection of large gene rearrangements).
81165	BRCA1 (BRCA1, DNA repair associated) (e.g., hereditary breast and ovarian cancer) gene analysis; full sequence analysis.
81166	BRCA1 (BRCA1, DNA repair associated) (e.g., hereditary breast and ovarian cancer) gene analysis; full duplication/deletion analysis (i.e., detection of large gene rearrangements).
81167	BRCA2 (BRCA2, DNA repair associated) (e.g., hereditary breast and ovarian cancer) gene analysis; full duplication./deletion analysis (i.e., detection of large gene rearrangements)
81212	BRCA1 (BRCA1, DNA repair associated), BRCA2 (BRCA2, DNA repair associated) (e.g., hereditary breast and ovarian cancer) gene analysis; 185delAG, 5385insC, 6174delT variants.
81215	BRCA1 (BRCA1, DNA repair associated) (e.g., hereditary breast and ovarian cancer) gene analysis; known familial variant.
81216	BRCA2 (BRCA2, DNA repair associated) (e.g., hereditary breast and ovarian cancer) gene analysis; full sequence analysis.
81217	BRCA2 (BRCA2, SNA repair associated) (e.g., hereditary breast and ovarian cancer) gene analysis; known familial variant.

COVERED DIAGNOSIS CODES

Codes						
C25.0	C25.1	C25.2	C25.3	C25.4	C25.7	C25.8
C25.9	C48.1	C48.2	C48.8	C50.011	C50.012	C50.019
C50.021	C50.022	C50.029	C50.111	C50.112	C50.119	C50.121
C50.122	C50.129	C50.211	C50.212	C50.219	C50.221	C50.222
C50.229	C50.311	C50.312	C50.319	C50.321	C50.322	C50.329
C50.411	C50.412	C50.419	C50.421	C50.511	C50.512	C50.519
C50.521	C50.522	C50.529	C50.611	C50.612	C50.619	C50.621
C50.622	C50.629	C50.811	C50.812	C50.819	C50.821	C50.822
C50.829	C50.911	C50.912	C50.919	C50.921	C50.922	C50.929
C56.1	C56.2	C56.9	C57.00	C57.01	C57.02	C57.4
C79.60	C79.61	C79.62	C79.81	D01.7	D05.00	D05.01
D05.02	D05.10	D05.11	D05.12	D05.80	D05.81	D05.82
D05.90	D05.91	D05.92	D07.30	Z15.01	Z15.02	Z80.0
Z80.3	Z80.41	Z80.42	Z85.07	Z85.3	Z85.43	Z85.44
Z85.45	Z85.46	Z85.49				

SUMMARY OF LITERATURE

It has been estimated that between 5% and 10% of breast cancers are thought to be genetic. The majority of hereditary breast cancers are associated with inherited mutations in one of the breast-cancer-susceptibility genes, BRCA1 or BRCA2. Individuals that carry the BRCA1 and the BRCA2 mutations have an increased lifetime risk of about 80% for those who live to age 70. In the contralateral breast, the lifetime risk of cancer is about 40%, and for ovarian cancer, the lifetime risk is approximately 40% with the BRCA1 mutation and 20% with the BRCA2 mutation (ECRI, 2015). The BRCA mutations can be transmitted via maternal and/or paternal lineage. However, not all who inherit the genetic mutation develop cancer.

Hereditary breast and ovarian cancer syndrome is a familial cancer syndrome that is related to mutations in the BRCA genes located on chromosomes 17q21 (BRCA1) and 13q12.3 (BRCA2). Identification of patients with the genetic mutation can result in enhanced screening and surveillance which could lead to improved outcomes.
The characteristics of BRCA1 and BRCA2 genes are different and are considered together since their similarities outweigh their differences. There are commercial tests available for BRCA1 and BRCA2 mutation assessment.
Prior to genetic testing, an expanded family medical history which includes first-, second-, and third-degree relatives is an essential and integral component to identify men and women who may be candidates for genetic counseling and for BRCA testing for specific risk interventions. Family medical history should include all types of cancers, age of cancer diagnosis, risk-reducing surgeries, carcinogen exposure, and documentation records of primary cancers. Available resources concur that widespread screening of the general population for BRCA gene mutations is not recommended, nor for screening individuals that are unaffected with no personal or family history of breast and/or ovarian cancer, or in individuals younger than 18 years of age. There is no established clinical utility for the use of genetic testing for BRCA mutations in individuals younger than 18 years of age. This is due to the fact that there is no change in the management of this particular age group with the knowledge of the presence or absence of this genetic mutation. There is also the risk of potential harm related to stigmatization and discrimination based on BRCA testing. The Society of Gynecologic Oncologists (Lancaster et al., 2014) has documented that the risk of developing breast or ovarian cancer in an individual younger than age 21 is very low, regardless of families with inherited cancer susceptibility as a result of hereditary breast and ovarian cancer syndrome.

A variety of tools have been developed to determine the probability of identifying BRCA1 and BRCA2 gene variants. These tools assist in identifying suitable candidates for testing. Examples of available Screening Tools include:

- Ontario Family History Assessment Tool (FHAT)
- Manchester Scoring System
- Referral Screening Tool (RST)
- Pedigree Assessment Tool (PAT)
- FHS-7

Genetic Counseling

The 2015 NCCN guidelines for genetic counseling have counseling services divided into pre-test and post-test categories. The pre-test counseling requirements include:

- Collection of a comprehensive family history (close blood relatives include first-, second-, and third-degree relatives on each side of the family);
- Evaluation of a patient's cancer risk;
- Generation of a differential diagnosis and education of the patient on inheritance patterns, penetrance, variable expressivity, and the possibility of genetic heterogeneity.

Post-test counseling includes:

- Providing results along with their significance and impact and recommended medical management options;

- Informing and testing at-risk family members;
- Providing available resources such as disease-specific support groups and research studies.

The National Society of Genetic Counselors (NSGC) has recommended that genetic testing be performed utilizing the informed decision-making process (Berliner et al., 2013). Issues included in the process should include the following:

- Obtaining all pertinent personal medical and family history data
- Psychosocial assessment
- Discussion of cancer and mutation risk and how personalized risk estimates are derived
- Facilitation of the informed consent process through discussion of the risks, benefits, limitations, and likelihood of identifying a mutation with genetic susceptibility testing
- Result disclosure, when appropriate
- Discussion of medical management options
- Review of issues related to genetic discrimination

Cell cycle checkpoint kinase 2 (CHEK2) involves DNA repair and human cancer predisposition similar to BRCA1 and BRCA2. CHEK2 is normally activated in response to DNA double strand breaks, and it regulates the function of BRCA1 protein in DNA repair. CHEK2 also exerts critical roles in cell cycle control and apoptosis. The CHEK2 mutation is identified as 1100delC in exon 10 and has been associated with familial breast cancers. CHEK2 mutations account for approximately one-third of mutations identified in BRCA-negative patients, however the CHEK2 mutations are rare, making accurate estimates of risk less precise.

A recent study (Tung et al., 2015) performed an assessment of the frequency of pathogenic mutations among patients with breast cancer that had been referred for BRCA1/2 testing. The study included two cohorts. Cohort 1 consisted of 1,781 patients referred for BRCA1/2 testing between November 2012 and April 2013. A total of 241 (13.5%) individuals were found to have a mutation in at least 1 of the 25 genes tested, 162 in BRCA1/2, and 76 in at least one of the other genes. Of the mutation-positive, BRCA1/2-negative patients, the most common mutation identified was in CHEK2 (n=29), accounting for approximately one-third of the additional mutations identified in BRCA-negative patients, and 12% of mutations overall. The second cohort consisted of 377 samples from patients who were referred to Beth Israel Deaconess Medical Center for genetic testing between 1998 and 2013 and had previously tested negative for BRCA1/2. Mutations were identified in additional genes in 14 women, of which CHEK2 was the most frequent (n=5), comprising approximately 33% of mutations identified in mutation-positive, BRCA-negative patients.

Despite studies showing that the CHEK2 mutation appears to account for one-third of mutations identified in BRCA1/2-negative patients, it is relatively rare. Accurate risk estimates, which have been studied in population- and family-based case controls, are subject to bias.

National Comprehensive Cancer Network guidelines for Genetic/Familial High-Risk Assessment: Breast and Ovarian (v.1.2015) state that in a patient with a CHEK2 mutation, intervention is warranted based on gene and/or risk level. The intervention that is recommended is annual breast magnetic resonance imaging (for women who have a lifetime risk of developing breast cancer of >20%, as defined by models that are largely dependent on family history). Evidence is insufficient to recommend risk reduction mastectomy intervention.

Additional studies are needed to determine if patients with a CHEK2 mutation have a risk that is similar to the risk with a high-penetration mutation. Clinical management recommendations for individuals with breast cancer and CHEK2 mutation are not standardized. The evidence is not sufficient to determine the effects of this technology on health outcomes.

Other studies have looked at the results of prostate cancer screening in men with BRCA mutations. The IMPACT study (2011) evaluated the results of screening in 205 men 40 to 69 years of age who were BRCA mutation carriers and 95 control patients. At the baseline screen, biopsies were performed in 7.0% of patients with a prostate-specific antigen (PSA) level greater than 3.0, and prostate cancer was identified in 3.3%. This resulted in a positive predictive value of

47.6%, which is considerably higher than that estimated for normal-risk men. Also, the grade of tumor identified was intermediate in 67% of cancers and high in 11%. This differs from the expected distribution of cancer grade in average-risk men, with more than 60% expected to have low-grade cancer.

Members of the Jewish community who trace their roots to Central or Eastern Europe are known as Ashkenazi Jews. For centuries, this ethnic population was geographically isolated. The isolation experienced by this population means it members can trace their ancestry back to a small number of members known as “founders.”

Approximately 1 in 40 individuals of Ashkenazi Jewish descent is a carrier for BRCA mutation, leaving these individuals at a higher risk of developing breast and ovarian cancer. This is compared to mutation frequency of 1 in 500 in the general population. These mutations are inherited in an autosomal dominant pattern, so males and females with such a mutation, whether or not they develop cancer, have a 50% chance of passing on the gene mutation to the next generation.

Just as Ashkenazi women have an increased risk for the BRCA genetic mutation, males of this ethnic population have a higher risk of developing male breast cancer and prostate cancer. Men that inherit the BRCA1/2 gene have a 6% risk of developing breast cancer and are three to seven more times likely than average to develop prostate cancer.

References

American Society of Human Genetics Ad Hoc Committee on Breast and Ovarian Cancer Screening. Statement of the American Society of Human Genetics on genetic testing for breast and ovarian cancer predisposition. Am J Hum Genet. 1994; 55: ii-iv. Accessed on April 11, 2016.

American College of Obstetricians and Gynecologists (ACOG). Hereditary breast and ovarian cancer syndrome. ACOG Practice Bulletin No. 103. Obstet Gynecol. 2009; 113(4):957-966. Accessed on April 11, 2016.

Evans D.G., Gaarenstroom K.N., Stirling D., et al. Screening for familial ovarian cancer: Poor survival of BRCA1/2 related cancers. J Med Genet. 2009; 46(9):593-597. Accessed on April 12, 2016.

American College of Obstetricians and Gynecologists (ACOG). Breast cancer screening. Washington, DC: American College of Obstetricians and Gynecologists (ACOG); August 2011. Accessed on April 12, 2016.

Bayraktar S., Elsayegh N., Gutierrez Barrera A.M., et al. Predictive factors for BRCA1/BRCA2 mutations in women with ductal carcinoma in situ. Cancer. 2012; 118(6):1515-1522. Accessed on April 12, 2016.

Berliner J.L., Fay A.M., Cummings S.A., et al. National Society of Genetic Counselors (NSGC) practice guideline: risk assessment and genetic counseling for hereditary breast and ovarian cancer. J Genet Couns. 2013Apr; 22(2):155-63. Accessed on April 12, 2016.

ECRI Institute. Genetic Test Product Brief. BRAC Analysis® test (Myriad Genetics, Inc.) for assessing risk of hereditary breast and ovarian cancer. December 2014. Accessed on April 12, 2016.

Moyer V.A. Risk Assessment, Genetic Counseling, and Genetic Testing for BRCA-Related Cancer in Women: U.S. Preventive Services Task Force Recommendation Statement. Ann Intern Med. 2014; 160(4):271-281. Accessed on April 12, 2016.

U.S. Preventive Services Task Force (USPSTF). Recommendation Statement: Risk Assessment, Genetic Counseling, and Genetic Testing for BRCA-Related Cancer in Women. Release date: December 2013. Accessed on April 12, 2016.

National Cancer Institute (NCI), NCI Fact Sheet- BRCA1 and BRCA2: Cancer Risk and Genetic Testing, last reviewed: 01/22/14. Accessed at cancer.gov 09/09/14. Accessed in April 12, 2016.

National Comprehensive Cancer Network, (NCCN) Clinical Practice Guidelines in Oncology, Genetic/Familial High-Risk Assessment: Breast and Ovarian, V. 1.2015. Accessed on April 12, 2016.

Lancaster J.M., Powell C.B., Chen L.M., et al. Statement on risk assessment for inherited gynecologic cancer predispositions. Gynecologic oncology. Sep 17, 2014, Accessed on April 12, 2016.

Tung N, Battelli C, Allen B, et al. Frequency of mutations in individuals with breast cancer referred for BRCA1 and BRCA2 testing using next-generation sequencing with a 25-gene panel. Cancer. Jan 1, 2015; 121(1):25-33. Accessed on April 12, 2016.

Mitra A.V., Bancroft E.K., Barbachano Y., et al. Targeted prostate cancer screening in men with mutations in BRCA1 and BRCA2 detects aggressive prostate cancer: preliminary analysis of the results of the IMPACT study. BJU Int. Jan 2011; 107(1):28-39. PMID 20840664.Accessed on April 12, 2016.

The Center for Jewish Genetics. Hereditary cancer. Accessed on April 13, 2016.

POLICY UPDATE HISTORY

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