Allina Health
VIRGINIA PIPER CANCER INSTITUTE

Oncology Service Line-Allina Health System-wide Consensus Guidelines: **Identification of Breast Cancer Patients at Risk for Inherited Cancer Risks**

These guidelines apply to clinical interventions that have well-documented outcomes, but whose outcomes are not clearly desirable for all patients.

Reference #: SYS-PC-VPCI-CG-002

Origination Date: June 2012
Next Review Date: April 2019
Effective Date: April 2016

Approved Date: April 2016
Approval By: Allina Health Quality Council

System-wide Ownership Group: Allina Health Breast Cancer Program Committee
System-wide Information Resource: Director of Clinical Programs; Manager of Genetic Programs

SCOPE:

Sites, Facilities, Business Units	Departments, Divisions, Operational Areas	People applicable to
Abbott Northwestern Hospital, Buffalo Hospital, Cambridge Medical Center, District One Hospital, Mercy Hospital, New Ulm Medical Center, Owatonna Hospital, Phillips Eye Institute, River Falls Area Hospital, Regina Hospital, St. Francis Regional Medical Center, United Hospital, Unity Hospital; West Health Inc.; Orthopedic Institute Surgery Center at COC; Allina Health Group; Allina Health Home Care Services; Allina Health All other patient care business units	Breast, oncology and General Surgeons Medical Oncology Oncology service line genetics team	MDs, Advance Practice Providers, Cancer Care Coordinators, Genetic Counselors

Guidelines are not meant to replace clinical judgment or professional standards of care. Clinical judgment must take into consideration all the facts in each individual and particular case, including individual patient circumstances and patient preferences. They serve to inform clinical judgment, not act as a substitute for it. These guidelines were developed by a Review Organization. These guidelines may be disclosed only for the purposes of the Review Organization according to Minn. Statutes §145.64 and are subject to the limitations described at Minn. Statutes §145.65

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CLINICAL PRACTICE GUIDELINES:

The Allina Health Breast Cancer Program Committee endorses the recommendations made by the National Comprehensive Cancer Network (NCCN) that all newly diagnosed breast cancer patients be assessed for hereditary cancer syndromes at the time of diagnosis because it can influence clinical managment. The American Society of Clinical Oncology (ASCO) also supports the need to recognize and manageme individuals with an inherited susceptibility to cancer are core elements of oncology care.

The following patients^ will be referred for assessment by a genetic counselor to determine appropriateness of genetic testing**, select the right testing, and faciliate testing if needed and interpret the results for the patient and family:

Personal history of breast cancer AND one or more than one of the following:

- **Diagnosis age ≤ 45**
- Diagnosis any age with at least one of the following:
  - ≥1 close* blood relatives with breast cancer diagnosed ≤50 y
  - ≥2 close blood relatives with breast cancer at any age
  - ≥1 close blood relatives with invasive ovarian cancer***
  - ≥2 close blood relatives with pancreatic cancer and/or prostate cancer (Gleason score ≥7) at any age
  - A close male blood relative with breast cancer
  - For an individual of ethnicity associated with highermutation frequency (eg, Ashkenazi Jewish) no additional family history may be required
- **Diagnosis ≤ age 60 with triple negative cancer**
- Diagnosis ≤ age 50 with any one of the following
  - An additional breast cancer primary cancer (i.e., 2 primary breast cancers with first occurring ≤ age 50)
  - ≥1 close blood relatives with breast cancer at any age
  - An unknown or limited family history (requires complete pedigree to demonstrate <2 unaffected females 45 or older in either lineage)(3)
- Male gender

^ these will be amended accordingly with changes in NCCN guidelines

*__One or more of the above criteria are suggestive of hereditary breast and ovarian cancer syndrome that warrants further professional evaluation__. Some who meet criteria MAY still not be good candidates for testing, as sporadic cancers can occur in HBOC families and/or results may not impact medical management. Also, Medicare will not pay for testing on someone without cancer.

*A close relative per NCCN is a first, second or third degree relative. The maternal and paternal sides should be considered independently.

** Testing recommended (unless otherwise stated) is comprehensive sequencing and comprehensive duplication/deletion/rearrangement test alone or as part of next-gen panel

***Mucinous and borderline tumors are only rarely BRCA 1/2 related (4). However all invasive ovarian cancer should be referred due to association with other heritable risks

****No true negative for breast cancer risk without known mutation as reason for ~50% of familial clusters of breast cancer remain unknown (see Special Entities section below).

SUPPORTING EVIDENCE:

NCCN (2015) (1) recommends the referral for the above newly diagnosed breast cancer patients. The results may impact immediate surgical decisions and availability of Poly (ADP-ribose) polymerase (PARP) inhibitors for treatment (7). Results will have significant impact on personal risks for additional primaries and risk and management options for screening and prevention for family members. Appropriate interventions for related cancers may provide a survival advantage for these patients. (A survival analysis of BRCA 1 and BRCA 2 carriers revealed that prophylactic surgery confers a substantial survival probability (8). ASCO recommends this testing is best done with assistance of a genetics professional. (9)

Even in the absence of a BRCA 1 or BRCA 2 mutation, substantial breast risks may still exist unless a familial mutation has been excluded and high risk management may still be appropriate, as outlined by American Cancer Society (ACS). This is because of the limits of testing and the existence of other susceptibility genes (see Special Entities). Models such as BRCAPRO, Boadicea, Claus, and Cusick-Tyrer all may be helpful, if properly employed and with a clear understanding of the strengths and limits of each model. Genetic counseling can help in this regard.

SPECIAL ENTITIES:

CONSIDER OTHER BREAST CANCER GENES: Mutations in BRCA 1 and 2 account for only about one fourth of heritable breast cancer so consideration of other gene testing should be entertained depending on histology, personal and family history, technology available and impact on management.

- TP53: consider with breast cancer diagnosis age ≤ 35(and BRCA negative) and/or family history suggestive of Li Fraumeni syndrome e.g. close relative with sarcoma, brain tumor, adrenal cortical tumor diagnosis <46-56 (NCCN and 10,)
- PTEN: breast cancer + macrocephaly; breast cancer + at least 2 of the following: follicular thyroid cancer, renal cancer, uterine cancer, hamartomatous polyps etc (11,NCCN)
- CDH1: lobular breast cancer + family history of diffuse gastric cancer
- STK11: breast cancer + diagnosis criteria for Peutz-Jeghers syndrome (NCCN)

Genomics: Moderate risk breast cancer genes (high with some alleles)—many insurance companies consider this research.

- PALB2 (breast + pancreatic cancer)
- CHEK2 (bilateral breast cancer, male breast cancer, colon cancer)
- ATM

Expanded gene panels identify mutations in one or more non-BRCA1, BRCA2 genes in 4-16% of eligible patients. Genetic counseling is needed to help patients with complexities of this testing. (9)

DEFINITIONS: NA

SPECIAL ENTITIES: NA

FORMS: NA

ALGORITHM: NA

ADDENDUM:

Plan for Monitoring and Adherence:
Summary

- Utilize RN coordinators dashboard to track compliance of all newly diagnosed breast cancer patients for at least 2 of the criteria (e.g. diagnosed at 45 or younger and those with triple negative breast cancers at 60 or younger). Establish baseline measurement on # of candidates for referral that has not been offered referral to genetics. (From tumor registry).
- The Breast Program's the data manager will mine the RN coordinators navigator for utilization of tool and then checking for evidence of referral. RN coordinator and MD would be accountable for unacceptable variation.
- Determine barriers to referral or follow through based on this data.
- Need support from IT and breast program committee to initiate and committee needs to determine how we notify providers of variation and how do we hold providers (surgeon, oncologist and/or RN coordinator) accountable.

REFERENCES:

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4. Robson ME, Storm CD, Weitzel J, et al. American Society of Clinical Oncology policy statement update: Genetic and Genomic Testing for Cancer Susceptibility. J Clin Oncol 2010;28:893-901
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10. Tinat J, Bougeard G, Baert-Desurmont S, et al. 2009 version of the Chompret criteria for Li Fraumeni syndrome. J Clin Oncol 2009; 27(26):e108-e109.
11. Tan MH, Mester JL, Ngeow J, et al. Lifetime Cancer Risks in Individuals with Germline PTEN Mutations. Clin Cancer Res 2012; 18(2):400-7.

Alternate Search Terms: N/A

Related Guidelines/Documents

Name	Content ID	Business Unit where Originated
Colon Cancer Inherited Risk	SYS-PC-VPCI-CG-001	System-wide