Eastern Health

Clinical Practice Guidelines – Breast Disease Site

Guideline Title:	Breast Magnetic Resonance Imaging (MRI) and High Risk Hereditary Breast Cancer - **Summary**	**Date:**	**(O):**	June 30, 2011
			(R):	Mar 31, 2016
Tumor Group:	Breast Disease Site Group	**Page:**		1 of 3
Issuing Authority:	Dr. Rick Bhatia, Clinical Chief, Diagnostic Imaging	**Date Signed:**		January 19, 2017
Adapted From	Cancer Care Ontario's (CCO) "Magnetic Resonance Imaging Screening of Women at High Risk for Breast Cancer", August 2012 (10).			

Target Population:

These recommendations apply to all patients who are deemed to be at high risk for the development of hereditary breast cancer, as per the criteria outlined by the Eastern Health Breast Disease Site Group.

Recommendations:

The Eastern Health Breast Disease Site Group recommends screening for all patients at risk of developing hereditary breast cancer in the form of:

- Developing breast awareness by performing periodic self-breast exam;
- Clinical breast exam once or twice a year;
- An initial mammogram starting at the age of 30, followed by annual mammography screening as long as the individual remains in good health. Discontinuation of breast screening should be at the discretion of a joint patient/physician decision;
- An annual MRI from age 30 years to age 69 years. Breast screening by MRI alone, following an initial baseline mammogram, is also appropriate for high risk individuals from 25 to 29 years of age, when the youngest affected relative's age at diagnosis is < 40 years. Hence, MRI screening may commence at ten years prior to age of the youngest affected relative, beginning no earlier than 25 years of age;
- Breast MRI should be scheduled during the second week of the menstrual cycle (days 5 to 13) in premenopausal women. Contrast-enhanced MRI screening is not performed during pregnancy, and can be postponed in lactating women until after cessation;
- Insufficient evidence exists to recommend breast MRI screening for those with dense breasts or previous pathological findings of LCIS, ADH, or ALH in a breast biopsy, in the absence of any indication of genetic mutation or a history of familial risk.

Definition:

The Eastern Health Breast Disease Site Group deems any individual, who has been previously assessed as having a 20% to 25% personal lifetime risk of breast cancer by a genetic counsellor, or by a practitioner using either of the risk assessment tools (1-3), or meets either of the following criteria, to be **"high risk"** for developing hereditary breast cancer:

1. a known mutation in BRCA1, BRCA2, CDH1 (Hereditary Diffuse Gastric Cancer), or other genes predisposing to a markedly elevated breast cancer risk;

2. an untested first- or second-degree relative of a carrier of such a genetic mutation;

3. a family history consistent with a hereditary breast cancer syndrome, mutation unknown. Individuals eligible for MRI in such families would be *first*- (mother, daughter, sister) and *second-degree* (grandmother, aunt, niece, or half-sister) relatives of individuals with breast and ovarian cancer, where there are:
   a) Four or more relatives with breast* or ovarian** cancer at any age *on the same side* of the family, who are all first- or second-degree relatives of one another **or** in a pattern suggestive of a hereditary cancer predisposition;

   b) Three first- or second-degree relatives with breast* or ovarian** cancer, *on the same side* of the family, with **one or more** of the following:
      - One person affected < 50 years of age,
      - Breast and ovarian cancer in the same individual, bilateral or multifocal breast cancer in one individual,
      - Male breast cancer.

If the healthcare provider establishes that the individual qualifies as being high risk, a referral for genetic counselling is warranted. If the individual also meets the Eastern Health Breast Disease Site Group's "high risk" criteria, enhanced screening may be an option. This would include annual breast MRI screening, with or without mammography, dependent upon the age of the individual and at the request of the referring physician, and reported by a radiologist with specific training in breast MRI.

Qualifying Statement:

Several studies have revealed that MRI is superior in sensitivity to mammography, but significantly lower in specificity, resulting in a higher false-positive rate (4-8). Therefore, the recommendation would be for its use in screening only those patients at significant risk of developing breast cancer, such as those with a genetic or hereditary predisposition or those with a past history of having received mediastinal radiation between ages of 10 and 30. (See full guideline "Indications for Use of Breast MRI").

* includes ductal carcinoma in-situ (DCIS), but not lobular carcinoma in-situ (LCIS).
** refers to invasive non-mucinous epithelial ovarian cancer, includes cancer of the fallopian tubes or primary peritoneal cancer; excludes borderline ovarian tumors.

Note: Breast MRI should be scheduled during the second week of the menstrual cycle (days 5 to 13) in premenopausal women. Occasionally, areas of normal hormonally sensitive breast tissue may enhance intensely on MRI which could result in a false positive reading. Therefore, examination is best performed in mid-cycle (9).

Disclaimer:

These guidelines are a statement of consensus of the Breast Disease Site Group regarding their views of currently accepted approaches to diagnosis and treatment. Any clinician seeking to apply or consult the guidelines is expected to use independent medical judgment in the context of individual clinical circumstances to determine any patient's care or treatment.

Contact Information:

For more information on this guideline, please contact Dr. Nancy Wadden MD FRCPC, St. Clare's Mercy Hospital, St. John's, NL; Telephone 709-777-5657. For the complete guideline on this topic or for access to any of our guidelines, please visit our Cancer Care Program website at www.easternhealth.ca

Literature Support:

1. B-RST. www.breastcancergenescreen.org
2. IBIS. www.ems-trials.org/riskevaluator
3. Gail model. www.cancer.gov/bcrisktool
4. Warner E, Plewes DB, et al. Surveillance of BRCA1 and BRCA2 mutation carriers with magnetic resonance imaging, ultrasound, mammography, and clinical breast examination. JAMA. 2004;292(11):1317-1325.
5. Riedl CC, Ponhold L, et al. Magnetic resonance imaging of the breast improves detection of invasive cancer, preinvasive cancer, and premalignant lesions during surveillance of women for high risk for breast cancer. Clin Cancer Res. 2007;13(20):6144-6152.*
6. Lehman CD, Blume JD, et al. Screening women at high risk for breast cancer with mammography and magnetic resonance imaging. Cancer. 2005;103(9):1898-1905.
7. Lord SJ, Lei W, et al. A systematic review of the effectiveness of magnetic resonance imaging (MRI) as an addition to mammography and ultrasound in screening young women at high risk of breast cancer. Eur J Cancer.2007; 43(13):1905-1917.
8. Kriege M, Brekelmans CTM, et al. Efficacy of MRI and mammography for breast-cancer screening in women with a familial or genetic predisposition. N Engl J Med. 2004; 351(5):427-437.
9. Delille JP, Slanetz PJ, et al. Physiologic changes in breast magnetic resonance imaging during the menstrual cycle: Perfusion imaging, signal enhancement, and influence of the T1 relaxation time of breast tissue. The Breast Journal.2005;11(4):236-241.
10. Warner E, Messersmith H, et al. Magnetic Resonance Imaging Screening of Women at High Risk for Breast Cancer: A Clinical Practice Guideline. Cancer Care Ontario. April 2007; Revised August 2012. www.cancercare.on.ca