Eastern Health

Clinical Practice Guidelines – Breast Disease Site

Guideline Title:	Breast Magnetic Resonance Imaging (MRI) and High Risk Hereditary Breast Cancer - **Summary**	**Date:**	**(O):** **(R):**	June 30, 2011
Tumor Group:	Breast Disease Site Group	**Page:**		1 of 3
Issuing Authority:	Dr. Rick Bhatia Clinical Chief, Diagnostic Imaging	**Date Signed:** November 26, 2012		
Adapted From	Alberta Health Services "risk reduction and surveillance strategies for individuals at high genetic risk for breast and ovarian cancer", April 2011 (7).			

Target Population:

These recommendations apply to all patients who are deemed to be at high risk, as per the definition of Eastern Health, for the development of hereditary breast cancer.

Recommendations:

All patients who meet the criteria for being at high risk of developing hereditary breast cancer should undergo annual screening breast MRI, if requested by a referring physician. Optimally, the high risk patient should have an initial mammography, followed in 6 months by the performance of a breast MRI. Continue to alternate mammography and breast MRI every 6 months.

Definition:

The Eastern Health Breast Disease Site Group's definition of **"high risk"** would be those patients who have any of the following:

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-* (parent, child, sibling) and *second-degree* (grandparent, aunt, uncle, niece, nephew, or half-sibling) 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.

* 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.

Qualifying Statements:

- Several studies have revealed that MRI is superior in sensitivity to mammography, but significantly lower in specificity, resulting in a higher false-positive rate (1-5). 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”).

- There is no role for breast MRI in the routine screening of asymptomatic patients, including those with a history of breast cancer such as invasive lobular carcinoma, lobular carcinoma insitu (LCIS), or atypical ductal hyperplasia (ADH).

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 (6).

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. 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.
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4. 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.
5. 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.
6. 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.
7. Risk reduction and surveillance strategies for individuals at high genetic risk for breast and ovarian cancer. Alberta Health Services. 2011. www.albertahealthservices.ca