Cancer Care Ontario
Action Cancer Ontario

June 2011

ONTARIO BREAST SCREENING PROGRAM (OBSP)

Women at High Risk for Breast Cancer

SUMMARY OF EVIDENCE

Definition of high risk

A woman is eligible for this program if she is asymptomatic, is aged 30 to 69 and meets any one of the following **HIGH RISK CRITERIA**[1]:

- Is known to be a carrier of a deleterious gene mutation (e.g., BRCA1, BRCA2);
- Is the first degree relative of a mutation carrier (e.g., BRCA1, BRCA2) and has declined genetic testing;
- Has been determined to be at ≥ 25% lifetime risk of breast cancer based on family history– must have been assessed using either the IBIS or BOADICEA risk assessment tools, preferably by a genetics or breast cancer clinic;
- Has received chest radiation (not x-ray) before age 30, and at least 8 years previously.

Asymptomatic women who are Ontario residents with a valid OHIP number, and who are deemed to be at high risk, are eligible for the OBSP high risk screening program.

Women at high risk for breast cancer as compared to women in the general population

- Less than 1% of women in the general population are estimated to be at high risk.[1, 2]
- About 5% to 10% of breast cancers are thought to be hereditary, resulting from gene mutations inherited from a parent.[3, 4] Breast cancer risk is higher among women who have multiple close blood relatives with breast cancer, especially if they developed breast cancer at a young age.[3]
- Women at high risk develop breast cancer at an earlier age and their breast cancers tend to be more aggressive than breast cancers found in women in the general population.[5]
- Women at high risk, if already diagnosed with cancer in one breast, have an up to 65% risk of developing cancer in the other breast.[1, 4]
- It is estimated that approximately 34,000 women (aged 30 to 69 years) in Ontario are at high risk and would be eligible for annual MRI and mammogram screening through the OBSP high risk screening program.[6]

Women at high risk for breast cancer should have annual screening with combined mammography and breast MRI from age 30 to 69.[1]

Evidence for screening women at high risk with combined MRI and mammography

- A meta-analysis of studies found MRI to have numerically superior discriminatory power overall compared to mammography in determining the true breast cancer status of high risk women. The summary sensitivity was 80.1% (95% confidence interval [CI] 73.3% to 85.8%) for MRI and 36.8% (95% CI 29.6% to 44.5%) for mammography. The summary specificity was 93.0% (95% CI 92.5% to 93.6%) for MRI and 97.5% (95% CI 97.1% to 97.8%) for mammography.[1]
- There is a lack of randomized controlled trials (RCTs) evaluating the effectiveness of combined mammography and MRI screening. Once preliminary evidence from comparative pilot studies of MRI and mammography was available, RCTs were no longer considered to be feasible, and perhaps not even ethical.[1]
- The recommendations for MRI screening are based on indirect evidence and specific assumptions, according to the following rationale:
  - Screening mammography, which downstages cancers (relative to no screening) in the general population, has demonstrated a mortality decrease of 20% to 30% in RCTs.[1]
  - Since MRI screening downstages cancers (relative to mammography) in a particular high risk population in prospective comparative studies, it likely decreases mortality in that high risk population.[1]

Screening for women at high risk for breast cancer with MRI in addition to mammography significantly increases screening sensitivity, with a moderate but acceptable decrease in specificity.[1]

Cancer Care Ontario gratefully acknowledges the contributions of members of the Expert Panel in guiding the expansion of the OBSP to include women at high risk and in authoring the supporting clinical guidelines, tools and education materials.

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