ORIGINAL ARTICLE

# Does a High-Risk Recommendation in Mammography Reports Increase Attendance at a Breast Cancer Risk Assessment Clinic?

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## Abstract

**Purpose:** This study evaluates the effectiveness of introducing, in 2012, a standardized recommendation into mammography reports, to recruit women at high risk for breast cancer into our risk assessment clinic.

**Methods:** The study population was comprised of patients presenting for screening or diagnostic mammography, in 2011 and 2013, who were identified as having a ≥20% lifetime risk for breast cancer. Mammographic reports were assessed for annotations addressing the patients' risk status and referral to a provider at the clinic. The percentage of patients given a high-risk recommendation who did, versus did not, consult a provider at the clinic, within 1 year of their mammogram, was analyzed.

**Results:** A total of 173 patients in 2011, and 241 patients in 2013, were identified as having a ≥20% lifetime risk of developing breast cancer. Of these, 40.5% were given a recommendation to attend our risk assessment clinic in 2011, versus 75.5% in 2013. Despite the overall increase in such recommendations by radiologists, only a modest increase occurred, from 11.4% to 14.3%, in patients that subsequently attended our risk assessment clinic.

**Conclusions:** Although the number of referrals to our high-risk clinic increased modestly after institution of a standardized reporting recommendation, >85% of patients at high risk, in 2013, did not consult a provider for patients at high risk, regarding their elevated lifetime risk of breast cancer.

**Key Words:** Breast risk assessment clinic, breast cancer, high risk, mammography, standardized reporting

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## INTRODUCTION

Breast cancer remains the most common cancer among women, with incidence rising annually. Primary care physicians can recognize familial cancer clustering through review of family history, and communicate its significance to the patient [1]. Established risk models can be used to predict whether a woman will develop breast cancer. However, although several sophisticated risk prediction models have been developed to assess the likelihood of carrying a BRCA1 or BRCA2 mutation, their complexity limits their usefulness in a primary care setting [2-7]. In 2004, an estimated 250,000 women in the United States carried BRCA1 or BRCA2 mutations, and only 10,000 (4%) of them had been identified [8]. Despite the advantages of cancer genetic risk assessment and testing, most individuals in the general population who would benefit from such services are not currently receiving them [9-11].

Women who present for screening or diagnostic mammography at our institution undergo individualized risk assessment with the National Cancer Institute (NCI) Breast Cancer Risk Assessment Tool [12], based on the Gail model [13]. The Breast Cancer Risk Assessment Tool was designed by researchers at the National Cancer Institute and the National Surgical Adjuvant Breast and Bowel Project (NSABP) as a tool for health care providers [12-14].

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This tool calculates a woman's risk of developing breast cancer within the next five years, and within her lifetime (up to age 90 years). It takes into account seven key risk factors for breast cancer: age; age at first menses; age at time of birth of first child; nulliparity; first degree relatives with history of breast cancer (mother, sister, or daughter); number of breast biopsies; number of breast biopsies showing atypical hyperplasia; and race and ethnicity [14]. The tool is embedded into our standardized mammography reporting system. Given that decisions regarding supplemental breast cancer screening and evaluation by a provider for patients at high risk should be based on individual risk factors, our institution implemented a standardized high-risk reporting recommendation, to provide referral physicians with information regarding patients' risk of developing breast cancer.

The potential benefits of identifying individuals at hereditary risk for breast and ovarian cancer are well documented. Detection of these individuals by risk assessment will lessen the mortality from both breast and ovarian cancer in these patients. Individuals with genetic mutations of the BRCA 1 or BRCA 2 genes have lifetime risk of 45%-65% for breast cancer and an associated 11%-39% risk for the development of ovarian cancer. Estimates indicate that 2%-7% of breast cancers, and 10%-15% of ovarian cancers are the result of an inherited mutation in one of these genes [15-17].

Management options targeted for patients at high risk of developing breast cancer, such as prophylactic mastectomy, supplemental screening with breast MRI and bilateral salpingo-oopherectomy to lessen the risk of ovarian cancer have shown substantial potential to improve the likelihood of earlier detection and reduce cancer incidence in the population with this genetic mutation [8,18-21].

The American Cancer Society 2007 guidelines for use of MRI as an adjunct to mammography in breast cancer screening recommend annual breast MRI for women who: carry, or have a first-degree relative who carries, a mutation in the BRCA1 or BRCA2 gene; are in families with rare syndromes; received therapeutic chest radiation treatment between the ages of 10 and 30 years; or have a lifetime risk of $\geq$20% based on "risk models that are largely dependent on family history" [22]. Supplemental MRI screening, compared with conventional mammographic screening, allows for detection of additional cancers in this patient population [23-26]. Several studies have shown that MRI screening can detect cancer at an early stage, which is associated with better patient outcomes. MRI has higher sensitivity and can reveal smaller tumors, compared with mammography; and the types of cancers found with MRI are those that contribute to reduced mortality [21,22,24,27-31]. Supplemental ultrasound screening of women who have dense breast tissue, which contributes to higher-than-average cancer risk, has recently been advocated, based on shown results [32-36], but the benefit has not been as thoroughly studied, compared with to MRI.

Women with a lifetime risk >20% benefit not only from supplemental MRI screening, but also clinical evaluation by a provider specializing in the evaluation and treatment of patients at high risk [21,28,30,35,37-41]. This evaluation includes use of additional risk assessment tools and models (such as the Claus model) [42], for a more in-depth focus on family history. After such evaluation, the women may be offered adjunctive imaging or chemoprevention.

We chose to study whether use of this standardized reporting template with the high-risk recommendation, along with the letter written in "lay" language informing patients of their high-risk status, improved attendance at our breast center risk assessment clinic.

## METHODS

This retrospective study is HIPAA compliant and was approved by our institutional review board. A list was generated of female patients in the age range of 36 to 90 years who were identified as being at high risk for breast cancer, with an estimated NCI lifetime risk of $\geq$20%. Risk was determined from either a screening or diagnostic mammogram, conducted and evaluated in 2011 and 2013, using the MagView® mammography information management software system (MagView, Burtonsville, Maryland).

This system can generate standard mammography reports, as well as patient follow-up recommendations and annual reminders written in "lay" language. The MagView software automatically provides an NCI (Gail model) 5-year and lifetime risk analysis for each patient, regardless of screening or diagnostic breast imaging examination. Data from 2012 were not included, because the standardized high-risk reporting recommendation and patient letter were implemented in this year.

A total of 414 patients were identified, using the Gail model, as having a lifetime risk of breast cancer of >20%: 173 in 2011, and 241 in 2013. Only patients with a BI-RADS 1 or 2 category assessment were included in this data set, because the communication regarding high risk in women who received a BI-RADS category 3, 4, or 5 assessment was both written and face-to-face. We evaluated only the effectiveness of the *written* risk assessment recommendation given to women and their providers.