

What Does It Mean to be High-Risk?

One in eight women will develop breast cancer in her lifetime, however, women at high risk for breast cancer are significantly under-identified. Each year, millions of women in the United States do not receive a simple risk assessment that could change their lives.

Early identification of high-risk patients using risk assessment tools allows physicians to engage their patients in a discussion of hereditary, hormonal and pathological factors that may contribute to their increased risk. Some factors cannot be influenced such as family history (the primary factor in determining breast cancer risk.) Factors such as BMI may

be improved through patient behavior modification.

Once identified as high-risk, a patient can collaborate with her physician to create a personalized breast cancer screening plan and follow-up schedule. Appropriate options will vary based on the particular risk factors involved and the shared decision making between the patient and physician.

Because the accepted breast cancer risk models each incorporate different risk factors (see reverse side), an individual patient will have varying results across the models based on her specific answers to the risk assessment questions.

OPTIONS FOR HIGH-RISK PATIENTS INCLUDE:

OBSERVATION

Regular breast exam, Lifestyle changes

SCREENING

Mammogram, MRI, Genetic testing

PREVENTATIVE MEASURES

Prophylactic surgery, Chemoprevention



CASE STUDY: MARIE

With CRA Health's guideline-based risk assessment tool, physicians are able to comprehensively identify breast cancer risk and recommend the right screening and prevention options in order to improve patient outcomes.

Patient Profile		Family History
<ul style="list-style-type: none"> • Age 55 • Caucasian • Three pregnancies • Age 35 at first birth • No hormonal factors • Menarche at 14 • Post-menopause 	Self:	<ul style="list-style-type: none"> • Heterogeneously Dense Breasts • Bilateral Oophorectomy
	Mother:	Ovarian Cancer at 68
	Father:	Prostate Cancer at 65
	Mat. G'mother:	Breast Cancer at 68
	Mat. Aunt:	Breast Cancer at 74

RISK SCORING

Breast / Ovarian Risk					
MODEL	BRCA 1/2 MUTATION	5 -YEAR BREAST CANCER	LIFETIME BREAST CANCER	5 -YEAR OVARIAN CANCER	LIFETIME OVARIAN CANCER
BRCAPRO	1.7%	0.9%	9.3%	0.0%	0.2%
Tyrer-Cuzick 8	0.9%	3.1%	21.2%	—	—
Claus	—	1.3%	7.1%	—	—
Gail	—	1.5%	10.1%	—	—
Myriad/Frank	3.0%	—	—	—	—

Marie's lifetime breast cancer risk score from the Tyrer-Cuzick model is significantly higher than her risk scores from the other models. Tyrer-Cuzick takes more factors into account relevant to Marie than the other models (see reverse side).

Risk factors incorporated into the leading breast cancer risk models

Leading Risk Models →	Gail	Claus	BRCAPRO	Tyrer-Cuzick 8	Myriad/Frank
PERSONAL INFORMATION					
Age	✓	✓	✓	✓	✓
Body mass index	—	—	—	✓	—
Ashkenazi heritage	—	—	✓	✓	—
HORMONAL / REPRODUCTIVE FACTORS					
Age at menarche	✓	—	—	✓	—
Age at first live birth	—	—	—	✓	—
Age at menopause	✓	—	—	✓	—
Hormone replacement therapy	—	—	—	✓	—
DENSITY					
Volpara, BIRADS, VAS	—	—	—	✓	—
PERSONAL HISTORY OF BREAST DISEASE					
Number of breast biopsies	✓	—	—	—	—
Atypical ductal hyperplasia	✓	—	—	✓	—
Usual ductal hyperplasia	—	—	—	✓	—
Lobular carcinoma in situ	—	—	—	✓	—
PERSONAL AND FAMILY HISTORY					
First-degree relatives	✓	✓	✓	✓	✓
Second-degree relatives	—	✓	✓	✓	✓
Third-degree relatives	—	—	—	—	✓
Age of onset of breast cancer	—	✓	✓	✓	✓
Bilateral breast cancer	—	—	✓	✓	—
Ovarian cancer	—	—	✓	✓	✓
Male breast cancer	—	—	✓	✓	✓
Breast cancer tumor markers	—	—	✓	—	—
Oophorectomy/Mastectomy	—	—	✓	—	—
BRCA testing result	—	—	✓	✓	—
OUTPUT OF RISK MODELS					
Risk of a BRCA mutation	—	—	✓	✓	✓
5 year risk breast cancer	✓	✓	✓	✓	—
Lifetime risk breast cancer	✓	✓	✓	✓	—
5 year risk ovarian cancer	—	—	✓	—	—
Lifetime risk ovarian cancer	—	—	✓	—	—

*Sources: Evans D Gareth R, Howell A 12 September 2007 Breast Cancer Research: Breast cancer risk-assessment models

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