



# Prevention

Breast Cancer Awareness Month October 2015

## Testing and Management Options for Hereditary Breast Cancer

The hallmarks of hereditary breast cancer are a strong family history of the disease often affecting multiple relatives at young ages and transmitted through one or more generations. The majority of individuals with a family history in one or two older relatives do not have a hereditary predisposition to breast cancer.

Other cancers occurring in the families likely to carry a gene mutation are ovarian cancer, male breast cancer, prostate cancer and pancreatic cancer amongst others.

When there is a strong family history of breast and ovarian cancer the family may have the Hereditary Breast Ovarian Cancer (HBOC) Syndrome. When a parent carries a BRCA gene mutation, whether they are male or female, each child has a 50% chance of inheriting that gene mutation. However, not all individuals carrying a BRCA gene mutation develop breast cancer but the lifetime risk is up to 80%.

The commonest mutations linked to a hereditary breast cancer are in the BRCA 1 or 2 genes. The features in the individual's history that increases the likelihood of a gene mutation being present are:

1. Early-onset breast cancer (diagnosed < 45 years of age).
2. Triple negative (ER-/PR-/HER2/ neu-) breast cancer diagnosed < 60 years of age.
3. Ovarian, fallopian tube, or primary peritoneal cancer at any age.
4. Bilateral or multiple primary breast cancers
5. Male breast cancer at any age.
6. Ashkenazi Jewish descent with breast cancer at any age.
7. Three or more cases of breast, ovarian, pancreatic, and/or high-grade prostate cancer at any age.
8. Known BRCA1 or BRCA2 mutation in the family.

## GENE TESTING

Gene testing is carried out under the supervision of a genetic counselor. After the individual understands what gene testing entails a blood sample is submitted to a laboratory for gene sequencing (testing).

Individuals who have a family history consistent with a hereditary pattern, who do not have a BRCA gene mutation, can undergo further testing. A number of other gene mutations may be associated with an increased risk of breast cancer (ATM, BARD1, BRIP1, CDH1, CHEK2, MRE11A, MUTYH, NBN, NF1, PALB2, PTEN, RAD50, RAD51C, RAD51D, TP53). Danielle Singer MS, genetic counselor at Mount Sinai Beth Israel and St. Luke's Roosevelt Medical Centers, states that it is likely new genes will be identified in the future that are linked to an increased susceptibility to breast cancer.

For those who have a gene mutation or a family history consistent with a hereditary gene mutation there are several options which should be discussed with a breast specialist for guidance regarding the options available:

- Clinical breast exam every 6 months.
- Annual mammogram and sonogram (breast ultrasound) beginning at age 35, or 10 years earlier than the youngest member of the family diagnosed with breast cancer, but not before age 25.

- For women with a lifetime breast cancer risk of greater than 20%, six monthly imaging with mammogram and sonogram alternating with breast MRI.

- If there are other types of cancers in the family, other screening and prevention options may be appropriate specific to cancers in the family.

- Risk-reducing medications (chemoprevention) such as tamoxifen for women age 35 or older who have not reached menopause and raloxifene for women who have reached menopause. Tamoxifen is limited to five years but raloxifene can be taken indefinitely and has the added advantage of reducing the likelihood of osteoporosis.

- Risk-reducing mastectomy with immediate reconstruction.

- Risk-reducing bilateral salpingo-oophorectomy between ages 35-40 or after completion of childbearing

- Transvaginal ultrasound and CA-125 every 6 months beginning at age 30 or 5-10 years before the earliest ovarian cancer in the family can be considered. Optimally, the individual with a family history suggesting a hereditary pattern should enroll in a breast surveillance program. It is where optimal care can be provided by a team comprised of a physician, genetic counselor, breast imaging specialist, oncology nurse and psychologist experienced in this complex management.

# BREAST MRI

## Breast MRI Scan

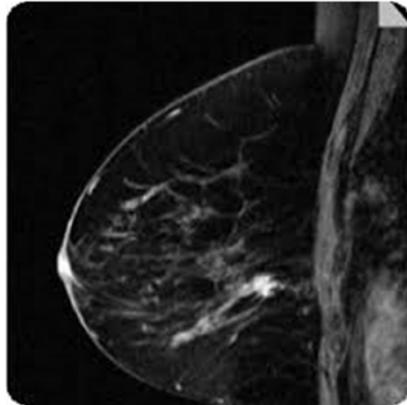
A breast MRI (magnetic resonance imaging) scan is an imaging test that uses powerful magnets and radio waves to create pictures of the breast and surrounding tissue. It does not use radiation (x-rays).

A breast MRI may be done in combination with mammography or ultrasound. It is not a replacement for mammography.

Before the test, tell your doctor if you have any metal or implants in your body, kidney disease or on dialysis (you may not be able to receive the IV contrast)

An MRI exam causes no pain but can induce claustrophobia in susceptible individuals. If you are very anxious, you may be given medicine to calm your nerves. You will need to lie still as movement can blur MRI images and cause errors. The machine makes loud thumping and humming noises when turned on. You will likely be given ear plugs to help reduce the noise. An intercom in the room allows you to speak to someone at any time. There is no recovery time, unless you were given a medicine to relax. After an MRI scan, you can return to your normal diet, activity.

MRI provides detailed pictures of the breast. It also provides clear pictures of parts of the breast that are hard to see clearly on an ultrasound or mammogram. The image below shows a small cancer (white mass) in the breast.



Breast MRI may be performed when breast cancer has been diagnosed, but its use is controversial except for a special type of breast cancer (invasive lobular cancer). MRI may be useful for screening for cancer in women at very high risk for breast cancer (those with a strong family history and/or carry a mutation in the BRCA 1 or BRCA 2 gene). MRI can be used in some circumstances to further evaluate an abnormal result on a mammogram or breast ultrasound. MRI is also used to identify possible rupture of breast implants.

No side effects from the magnetic fields and radio waves are known. The most common type of contrast (dye) used is gadolinium; It is very safe; allergic reactions to this dye are rare. However, gadolinium can be harmful to people with kidney problems or are on dialysis. The strong magnetic fields created during an MRI can make heart pacemakers and other implants not work properly. MRI can also cause a piece of metal inside your body to move or shift.

Breast MRI is more sensitive than a mammogram. However, breast MRI cannot always distinguish breast cancer from noncancerous breast growths. This can lead to a false positive result. Additionally, MRI cannot pick up tiny specks of calcium (micro calcifications), which a mammogram can detect that may indicate the presence of cancer. If there is a suspicious finding in the MRI scan, a biopsy is needed to determine whether the finding is related to cancer or harmless.

**Sources: National Institutes of Health, National Cancer Institute, and Ambry Genetics**

For further information visit [www.strang.org](http://www.strang.org)

# The Strang Cancer Prevention Cookbook

## Reduce your Risk for Cancer by Eating a Healthy Diet!

### Indian Spiced Vegetable Stew

- 2 teaspoons olive oil
- 1 medium red onion, peeled and sliced
- 4 small carrots, peeled and sliced 1/4 inch thick
- 1/2 small jalapeno pepper, seeded & diced
- 1 garlic clove, peeled and crushed
- 1/4 teaspoon cumin seeds
- 1 teaspoon curry powder
- 1 teaspoon turmeric
- 1 medium cauliflower, washed, core removed, and broken into medium-size florets
- 2 medium white potatoes (preferably Yukon Gold), peeled and cut into 1 1/2 -inch cubes
- 1 medium sweet potatoes peeled and cut into 1 1/2 inch cubes
- 14 1/2 ounces canned stewed tomatoes
- 1 cup canned chickpeas, drained
- 1 cup frozen peas



Heat the olive oil in a heavy 4 quart saucepan (preferably non stick).

Add the onion, carrots, jalapeno, and garlic. Sauté over medium- high heat until the onion slices are limp, about 10 minutes.

Add the cumin and spices, stirring for about 1 minute to combine and released their flavors.

Add the cauliflower, white and sweet potatoes, stewed tomatoes, add 3/4 cup water.

Season with salt and stir to combine all ingredients.

Bring to a boil, then reduce the heat and simmer for 20 minutes, covered, until all the vegetables are tender but firm.

Add the chickpeas and peas 2 to 3 minutes before serving and adjust the seasoning with salt if necessary.

Calories 262  
Protein 10 g  
Carbohydrates 47 g  
Fat 4 g  
Cholesterol 0 g  
Dietary fiber 10 g  
Saturated fat- 0 g

Major sources of Potential cancer fighters:

Phytochemicals: allium compounds, capsaicin, glucosinolates, indoles, plant polyphenols (flavonoids, phenolic acids), plant sterols, terpenes (carotenoids, monoterpenes).

Recipe by Laura Pensiero, R.D. Owner Gigi Trattoria, Rhinebeck, New York



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