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**History, Male Breast Cancer  
Gynecomastia, Causes and Risk Factors**



**Symptoms, Genetics, The Role of MRI for Screening,  
Frequently Asked Questions, References  
Special Thanks to Our Donors**

[www.MaleBreastCancer.org](http://www.MaleBreastCancer.org)

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## **John W. Nick Foundation, Inc.**

History: John W. Nick Foundation, Inc. was founded in 1995 by Nancy Nick with the help of her mother Patricia, and son Adam, in memory of her father John Nick who died from breast cancer at the age of 58 in 1991.



John, his family, and some of his physicians were unaware that men could get breast cancer. Who could have guessed that a lack of knowledge would kill him? John went to doctors three times in eight years. Each time he was told his symptoms were nothing to worry about. So he listened to his doctors and did nothing. Eight years later his symptoms were recognized and a mastectomy was performed. The diagnosis was male breast cancer “Paget’s Disease.” The oncologist prepared John’s treatment plan and remission was granted – but only for six months. He then lost his battle to cancer (it spread to his bones).

The events that surrounded John’s late diagnosis of male breast cancer, even after his expression of concern to three different physicians, was Nancy’s catalyst. Nancy E. Nick is totally dedicated to this cause. She started this campaign to educate people and the medical community about the disease that killed her father. Her crusade began in 1994 with a promise to her father that the world would know about male breast cancer. She promised that men would know that they are not alone and that male breast cancer does happen. John W. Nick did not die in vain and our educational outreach program has proven to save lives.

*This booklet is not intended for personal diagnosis. If you think you have a problem, please contact your physician immediately.*

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Produced by Nancy E. Nick and Brenda S. Theall

## Male Breast Cancer in the United States

For every 124 women who contract breast cancer, at least one man will contract the same disease. That's nearly 1% of breast cancer cases! (And the numbers are higher worldwide.)

For every woman who contracts breast cancer, at least one man will contract prostate cancer and will have an increased risk for breast cancer as well.

The mortality rate is about 42% greater for men with breast cancer than for women, because men are often diagnosed at a later stage.

Men who never manifest breast cancer can still pass on the gene to their children, creating a greater risk that the girls, in particular, will contract breast cancer.

As a result of all of this and more, tens of thousands of men, women, and children are affected by male breast cancer every year.

### Gynecomastia

Gynecomastia is a benign breast condition, the most common male breast disorder in which firm breast tissue forms directly under the nipple and areola.

The growth is described as button- like or disk-like and may make the breast tender.

Common among teenage boys and also older men, the condition is due to changes in hormone balances.

## Causes & Risk Factors of Male Breast Cancer



Male breast cancer (MBC) may occur more frequently in men with some of the following characteristics: never married, Jewish ancestry, previous benign breast disease, gynecomastia (breast enlargement in males), history of testicular or liver pathology, positive family history of breast cancer, or prior chest wall irradiation. As with women, aging is one of the largest risk factors behind male breast cancer.

Statistics show that the average male diagnosed with breast cancer is 65 years old. Diseases of the liver can put men at risk for developing breast cancer because the liver plays an important role in sex hormone metabolism. Men who have underlying estrogen treatment can have a slightly higher risk for breast cancer. Klinefelters's syndrome, which is a congenital condition, also puts men at an increased risk because it increases estrogen levels and lowers androgen levels.

The breast cancer genes -- BRCA1 and BRCA2 -- can be a cause of male breast cancer. 5% to 10% of all breast cancers are caused by inheritance of an abnormal gene. Today many thousands of Ashkenazic Jewish women and men around the world carry that mutated gene. Some of the female descendants who have inherited the mutated BRCA1 gene have developed or will develop breast or ovarian cancer. Women who inherit abnormal (mutant) forms of the breast cancer gene many have up to an 85% chance of contracting breast cancer and 44% chance of

## Causes & Risk Factors con't . . .

contracting ovarian cancer in their lifetime. Men who carry a BRCA1 or BRCA2 mutation also have an elevated risk of breast cancer, though not as high as the risk faced by women. In their normal forms, the BRCA genes control cell growth and suppress cancer. Ashkenazi Jewish women may carry two specific mutations, which have not been found in the non-Jewish population.

Family history is an important risk factor for hereditary breast cancer. Certain "red flags" may suggest a higher risk for hereditary breast cancer.



Breast cancer diagnosis before age 50



Breast cancer in multiple relatives on either the mother or father's side of the family



Breast and ovarian cancer in the same person



Ovarian cancer at any age



Male breast cancer



Bilateral breast cancer (cancer in both breasts)



Ashkenazi Jewish ancestry (Eastern European/Russian descent) with a family history of breast or ovarian cancer



A relative with a positive genetic test for BRCA1 or BRCA2

## Symptoms

As with breast cancer in females, male symptoms usually include the presence of a hard, painless lump and nipple discharge. The nipple may also be inverted, and accompanied by local pain or itching. A firm mass directly beneath the nipple is by far the most common presentation of breast cancer in men. Other symptoms to watch out for include:

- Swelling of the breast;
- Redness or scaling of the nipple or breast skin;
- A change in skin texture, such as dimpling or puckering.

Of course these symptoms don't necessarily mean that you have breast cancer. Some of these symptoms can be caused by other conditions, gynecomastia being the most common; however, [it is important to see your physician if you have any of these symptoms.](#)

Since symptoms in men tend to be ignored for longer periods, the disease is usually in a more advanced stage when diagnosed. A man should never hesitate to see his doctor if he notices these symptoms.

What if a doctor tells a man there's nothing to worry about upon discovering a lump? The man should get an immediate second opinion. Remember, not all doctors are aware of male breast cancer, and if your doctor isn't aware, make sure to send him or her to our website to start some research –



John W Nick Foundation, Inc  
Dedicated to Male Breast Cancer Awareness

[www.MaleBreastCancer.org](http://www.MaleBreastCancer.org)

## Genetics

Although 15-20% of men with breast cancer have a family history of male breast cancer, only about 7% of the male population has a positive family history. This tells us that some families carry genetic mutations that increase their risk for both male and female breast cancer.



5-10% of breast cancers that arise in women are related to genetic predisposition. Two breast/ovarian cancer genes, BRCA1 and BRCA2, are thought to account for 80% of multiple-case breast cancer families. The lifetime risk of breast cancer in affected women is 40-70%.

Inherited mutations in BRCA1 and BRCA2 also increase the risk of male breast cancer. In population-based series of men with breast cancer unselected for family history, 0-4% have BRCA1 mutations, while 5-15% have BRCA2 mutations.

Men who inherit germline BRCA2 mutations have an estimated 6% lifetime risk of male breast cancer; this represents a 100-fold higher risk than in the general male population.

Other genes may be involved in predisposition to male breast cancer. Mutations in the PTEN tumor suppressor gene, which causes Cowden's syndrome, have been associated with male breast cancer, as have mutations in mismatch repair genes (e.g., hMLH1).

## The Role of MRI for Breast Cancer Screening

There has been a great deal of debate regarding the use of magnetic resonance imaging (MRI) to detect breast cancer. Unlike mammography, which uses low dose x-rays, MRI's do not expose the patient to ionizing radiation. Additionally, the false-negative (missed cancer) rate for mammography is around 10%. However, MRIs have high rate of false positives, which, like a false alarm, can lead to unnecessary biopsies.



Although some studies indicate that MRI may be better able to detect certain breast cancers compared with mammography, the cost, high rate of false-positives, and inconsistent standards for performing MRIs have made broad use impractical. New guide-lines, however, provide guidance about how MRI should be used for breast imaging: the American Cancer Society released those guidelines stating for the first time that evidence supported routine MRI screening for patients at high risk of developing the disease - those with a 20% or greater risk of developing breast cancer over their lifetime, including individuals with strong family histories of breast cancer, certain genetic mutations, and other known risk factors.

A study found that MRI is significantly more sensitive than mammography for detecting ductal carcinoma in situ (a non-invasive, precancerous condition in which abnormal cells are found in the lining of a breast duct). MRI was particularly effective at finding those tumors that are more likely to be biologically aggressive and have the potential to turn into invasive breast cancer.

## Frequently Asked Questions

### Q. How will my physician confirm whether I have male breast cancer?

The same way he or she would confirm it in females. A biopsy is performed either by needle aspiration or standard excision/incision. Tissue evaluation is essential if there's concern regarding possible malignancy.

A physical examination with complete medical history, blood studies, mammogram and scans is used to establish the extent of the disease. If tests show up positive for male breast cancer, a mastectomy (removal of the breast) is usually performed.

### Q. How is male breast cancer treated?

Treatment of localized early stage breast cancer in men follows the same general principles as for female breast cancer. The primary tumor is usually treated surgically, with adjuvant systemic therapy administered in most cases. Because the majority of MBCs are hormone receptor-positive, five years of adjuvant tamoxifen is recommended for most men following mastectomy.

For advanced (metastatic) MBC, hormone therapy is usually the first approach for men. Systemic chemotherapy is generally reserved for treatment of men with rapidly progressive or symptomatic organ involvement, those who become refractory to hormone therapy, and for the treatment of hormone receptor-negative tumors.

## Frequently Asked Questions con't

### Q. If I am diagnosed with male breast cancer, what is my prognosis?



As in women with breast cancer, tumor size and the presence, as well as number of involved lymph nodes, are the most important prognostic factors for male breast cancer. Men with tumors measuring between 2 and 5 cm have a 40 percent higher risk of death than those with smaller lesions. Similarly, men with nodal involvement have a 50 percent higher risk of death than those with node-negative disease. In two reports involving 335 and 397 cases of MBC respectively, the following ten-year disease-specific survival rates were reported:

- ❖ No spread to lymph nodes                      77 and 84%
- ❖ Spread to one to three nodes                      50 and 44%
- ❖ Spread to four or more nodes                      24 and 14%

In summary, if MBC is detected before it has spread to the lymph nodes, your chance of living for 10 years is around 80%.

### Q. Do men have cosmetic surgery after a mastectomy?

A man generally faces fewer cosmetic and psychological needs in this case than women do.

There are, however, relatively simple procedures to reconstruct a man's chest, including tattooing.

## References

- Giordano, SH, Buzdar, AU, Hortobagyi, GN. Breast cancer in men. *Ann Inter Med* 2002; 137:678.
- Hamden, DG, Maclean, N, Langlands, AO. Carcinoma of the breast and Klinefelter's syndrome. *J Med Genet* 1971; 8:460.
- Scheike, O, Visfeldt, J, Petersen, B. Male breast cancer. 3. Breast carcinoma in association with the Klinefelter syndrome. *Acta Pathol Microbiol Scand [A]* 1973; 81:352.
- Hultborn, R, Hanson, C, Kopf, I, et al. Prevalence of Klinefelter's syndrome in male breast cancer patients. *Anticancer Res* 1997; 17:4293.
- Swerdlow, AJ, Schoemaker, MJ, Higgins, CD, et al. Cancer incidence and mortality in men with Klinefelter syndrome: a cohort study. *J Natl Cancer Inst* 2005; 97:1204.
- Hogervorst, FB, Cornelis, RS, Bout, M, et al. Rapid detection of BRCA1 mutations by the protein truncation test. *Nat Genet* 1995; 10:208.
- Struewing, JP, Brody, LC, Erdos, MR, et al. Detection of eight BRCA1 mutations in 10 breast/ovarian cancer families, including 1 family with male breast cancer. *Am J Hum Genet* 1995; 57:1.
- Ottini, L, Masala, G, D'Amico, C, et al. BRCA1 and BRCA2 mutation status and tumor characteristics in male breast cancer: a population-based study in Italy. *Cancer Res* 2003; 63:342.
- Liede, A, Karlan, BY, Narod, SA. Cancer risks for male carriers of germline mutations in BRCA1 or BRCA2: a review of the literature. *J Clin Oncol* 2004; 22:735.
- Machado, PM, Brandao, RD, Cavaco, BM, et al. Screening for a BRCA2 rearrangement in high-risk breast/ovarian cancer families: evidence for a founder effect and analysis of the associated phenotypes. *J Clin Oncol* 2007; 25:2027.
- Couch, FJ, Farid, LM, DeShano, ML, et al. BRCA2 germline mutations in male breast cancer cases and breast cancer families. *Nat Genet* 1996; 13:123.
- Thorlacius, S, Sigurdsson, S, Bjarnadottir, H, et al. Study of a single BRCA2 mutation with high carrier frequency in a small population. *Am J Hum Genet* 1997; 60:1079.
- Csokay, B, Udvarhelyi, N, Sulyok, Z, et al. High frequency of germ-line BRCA2 mutations among Hungarian male breast cancer patients without family history. *Cancer Res* 1999; 59:995.
- Friedman, LS, Gayther, SA, Kurosaki, T, et al. Mutation analysis of BRCA1 and BRCA2 in a male breast cancer population. *Am J Hum Genet* 1997; 60:313.
- Mavraki, E, Gray, IC, Bishop, DT, Spurr, NK. Germline BRCA2 mutations in men with breast cancer. *Br J Cancer* 1997; 76:1428.
- Haraldsson, K, Loman, N, Zhang, QX, et al. BRCA2 germ-line mutations are frequent in male breast cancer patients without a family history of the disease. *Cancer Res* 1998; 58:1367.
- Diez, O, Cortes, J, Domenech, M, et al. BRCA2 germ-line mutations in Spanish male breast cancer patients. *Ann Oncol* 2000; 11:81.
- Domchek, SM, Eisen, A, Calzone, K, et al. Application of breast cancer risk prediction models in clinical practice. *J Clin Oncol* 2003; 21:593.
- Sverdlow, RS, Barshack, I, Bar Sade, RB, et al. Genetic analyses of male breast cancer in Israel. *Genet Test* 2000; 4:313.
- Basham, VM, Lipscombe, JM, Ward, JM, et al. BRCA1 and BRCA2 mutations in a population-based study of male breast cancer. *Breast Cancer Res* 2002; 4:R2.
- Easton, DF, Steele, L, Fields, P, et al. Cancer risks in two large breast cancer families linked to BRCA2 on chromosome 13q12-13. *Am J Hum Genet* 1997; 61:120.
- Kwiatkowska, E, Teresiak, M, Filas, V, et al. BRCA2 mutations and androgen receptor expression as independent predictors of outcome of male breast cancer patients. *Clin Cancer Res* 2003; 9:4452.
- Fackenthal, JD, March, DJ, Richardson, AL, et al. Male breast cancer in Cowden syndrome patients with germline PTEN mutations. *J Med Genet* 2001; 38:159.
- Boyd, J, Rhei, E, Federici, MG, et al. Male breast cancer in the hereditary nonpolyposis colorectal cancer syndrome. *Breast Cancer Res Treat* 1999; 53:87.
- Willsher, PC, Leach, IH, Ellis, IO, et al. Male breast cancer: pathological and immunohistochemical features. *Anticancer Res* 1997; 17:2335.
- Donegan, WL, Redlich, PN, Lang, PJ, Gall, MT. Carcinoma of the breast in males: a multiinstitutional survey. *Cancer* 1998; 83:498.
- Ciatto, S, Iossa, A, Bonardi, R, Pacini, P. Male breast carcinoma: review of a multicenter series of 150 cases. Coordinating Center and Writing Committee of FONCAM (National Task Force for Breast Cancer), Italy. *Tumori* 1990; 76:555.

## Special Thanks to Our Donors



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John W. Nick Foundation, Inc. is grateful as always to the individual donors, foundations, and corporations who have invested in our Male Breast Cancer Awareness program. We have been able to stretch our donations through all of our in-kind donations, and services and information is offered free.

We cannot thank our donors enough for believing in us, and our cause, and for allowing us to take this orphan disease to the next decade. We are largely responsible for starting the conversation about male breast cancer in 1995. However, we would not have made it without our past and present donors. We look forward to future donors joining in our conversation in the world of male breast cancer.



**Donations to John W. Nick Foundation, Inc. can be made at our website [www.malebreastcancer.org](http://www.malebreastcancer.org) or by sending a check to P.O. Box 4133, Vero Beach, FL 32963, made payable to John W. Nick Foundation, Inc.**