



## Cornell University Program on Breast Cancer and Environmental Risk Factors in New York State (BCERF)

### Breast Cancer in Men

*Breast cancer is a rare disease among men. Many of the risk factors for male breast cancer are the same or similar to the risk factors for breast cancer in women. The survival of men with breast cancer is lower than survival in women but this results from death due to other health problems rather than breast cancer itself.*

#### **How common is breast cancer in men?**

Breast cancer is a very uncommon disease in men. For the year 2001, it is estimated that 1,500 men will be diagnosed with breast cancer. This is a small number relative to the 192,200 women projected to be diagnosed with breast cancer and the 643,000 men projected to be diagnosed with cancer in general. It is also estimated that 400 men will die from this disease; 40,200 women will die from breast cancer in 2001.

While the small number of men with this disease makes it difficult to study, a number of studies have gathered and pooled information on men with breast cancer. Men are not exposed to many of the reproductive risk factors that women are exposed to and study of breast cancer in men may lead to a new understanding of the formation of breast cancer in both sexes.

#### **How is breast cancer in men similar to or different from breast cancer in women?**

Most of the risk factors for breast cancer in men are also seen in women. The same types of tumors seen in women are also seen in men. The signs and

symptoms of the disease are the same in both sexes and the responses to treatment are similar. There are minor differences. The average age of diagnosis is five to ten years later for men than for women. Survival from breast cancer is similar in men and women (See *Does the survival of men with breast cancer compare to the survival of women with breast cancer?* below). Also, the number of estrogen receptor containing breast tumors (estrogen receptor positive tumors) in men is higher than in women in general. A real difference may not exist here; a comparison of breast tumors from similar aged men and women reveals little difference in the percentage of tumors that contain estrogen receptors. The presence of estrogen receptors in tumors is important because estrogen receptor containing tumors respond better to treatment (see BCERF Fact Sheet #9, *Estrogen and Breast Cancer Risk*).

#### **What are the risk factors for breast cancer in men?**

The risk factors for breast cancer in men and women are similar. Many of the risk factors for women are related to their lifetime exposure to estrogen and other female reproductive hormones (see BCERF



Fact Sheet #9, *Estrogen and Breast Cancer Risk*). Risk of breast cancer in men is also related to hormonal changes, including estrogen changes. Male breast cancer is associated with diseases or body conditions that increase estrogen exposure or that have effects similar to increased estrogen exposure. Body conditions that decrease levels of the male reproductive hormones, androgens, have also been associated. Such risk factors include: obesity, benign breast disease in men, diseases of the testes and liver, and a disease called Klinefelter's syndrome. Other risk factors in men are not directly related to hormonal effects. These risk factors include a family history of breast cancer and exposure to ionizing radiation, such as X-rays.

Obese men have higher levels of estrogen in their bodies because fat cells produce estrogen from other hormones. Risk increases, from three to five times that of average weight men, have been reported for very obese men. Benign breast disease is a breast cancer risk factor in men, as well as women. This group of diseases is characterized by abnormal non-cancerous, increased growth in the breast. The most common benign breast disease in men is called gynecomastia and involves increased growth of the glandular tissue in a man's breast. One study found no significant association between the use of drugs linked to gynecomastia and male breast cancer risk. Men with benign breast disease have been shown to be at more than twice the risk of breast cancer than men without a history of these conditions. Functional abnormalities of the testis can lead to decreased production of male hormones and growth of breast tissue. Testicular abnormalities are associated with increased breast cancer risk in men. Loss of liver function, seen in diseases such as cirrhosis, can lead to increases in estrogen levels and has been connected to breast cancer in men. Klinefelter's syndrome is a rare disease seen in one in 1,000 men. It is characterized by the occurrence of an extra sex chromosome. Men with this syndrome have two X chromosomes and one Y chromosome (XXY) rather

than the usual single X, single Y chromosome complement (XY). The testes in these men do not fully develop and they commonly have some breast development. Men with Klinefelter's syndrome have a risk of breast cancer that is 50 times that of men without this condition. This is the strongest risk factor for male breast cancer. Men with Klinefelter's syndrome have a risk of breast cancer that is similar to the risk of breast cancer in women.

A family history of both male and female breast cancer affects a man's risk of breast cancer. This is discussed in more detail below (See *Does family history affect male breast cancer risk?* below). Exposure to ionizing radiation is also suspected to be associated with breast cancer in men. Men with pulmonary tuberculosis, who had a large number of fluoroscopies and X-rays, have been reported to have higher incidences of breast cancer. The number of patients in these studies is small but the association of ionizing radiation and breast cancer in women is well established.

### **Are certain occupations associated with higher incidences of breast cancer in men?**

Men in some occupations may have higher rates of breast cancer. The rarity of male breast cancer means that the number of cases of male breast cancer for each occupation is small and the results tentative. Jobs reported to have higher risk include machinery repairers, steel manufacturing workers, motor vehicle manufacturing workers and jobs involving exposure to gasoline and vehicle combustion products. Some, but not all studies have reported higher risk for men exposed to electromagnetic fields such as electricians, telephone linemen and electric power and radio communications workers. The level of electromagnetic field exposure varies greatly for these workers; more study is needed of this, as well as, the other higher risk jobs.

Breast cancer in men is associated with higher economic status or wealth; it is not clear why. Breast cancer in



women is also associated with higher economic status. In women this association is thought to result from the choice of late childbirth. The similar association of breast cancer with affluence in men suggests a significant role for factors other than the age of first childbirth.

### **Are smoking and drinking alcohol risk factors for male breast cancer?**

Neither smoking nor drinking has been associated with breast cancer in men. In women, adult smoking is not associated with breast cancer but drinking alcohol beverages is. More study is needed to evaluate if alcohol affects the incidence of breast cancer in men as well.

### **Has diet been examined as a risk factor for male breast cancer?**

Only three studies have examined links between diet and male breast cancer. The results of these studies are conflicting, as well as indefinite. More study is needed in this area.

### **Does the survival of men with breast cancer compare to the survival of women with breast cancer?**

Men with breast cancer have a lower survival rate than women. The reason for this is not thought to be due to men's responses to treatment. Rather, this may be because men have shorter lives than women and many other health problems. One study reported that one third of the men with breast cancer died of other diseases, largely heart disease. After controlling for age and stage of the disease, survival is about the same in men and women.

### **Does family history affect male breast cancer risk and is the incidence different for people of different races?**

Breast cancer in both men and women does run in families. Two studies found that men who had a

father, mother, sister or brother with breast cancer had twice the risk of getting breast cancer of men with no close relatives with the disease.

The breast cancer susceptibility genes, BRCA1 and BRCA2, have been examined in relation to families with both male and female breast cancer. BRCA2 mutations were found in 76% of men with breast cancer, who were from families with at least 4 cases of breast cancer. BRCA1 mutations were found in 16% of these families.

The relative rates of breast cancer for men and women are similar for different parts of the world. Low rates for both sexes are seen in Asian countries and high rates for both sexes are seen in North America and Western Europe. African American men have higher rates of breast cancer than men of other races in the United States.

### **What studies of male breast cancer are needed?**

Studies are needed to:

- Verify existing and identify new occupations that are high risk for breast cancer in men
- Investigate alcohol drinking and male breast cancer
- Determine factors responsible for the high breast cancer incidence in African American men
- Examine the role of socioeconomic status in breast cancer risk in both men and women

### **What are the symptoms of male breast cancer?**

Breast cancer in men is usually seen as a firm mass directly underneath the nipple. This may be accompanied by a discharge from the nipple, which can be bloody. Pain and itching of the nipple may also be seen.



### What can men do now?


- Adopt a healthy lifestyle, involving regular exercise and a diet containing lots of fruits and vegetables. The role of a healthy lifestyle in breast cancer in men is unclear but the benefit for other cancers and diseases are well established.
- Know symptoms of male breast cancer and see a health care provider immediately if any symptoms occur.

An extensive bibliography on “Breast Cancer in Men” is available on the BCERF web site: <http://www.cfe.cornell.edu/bcerf/>

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