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FACT SHEET #13

Breast Cancer and Environmental Risk Factors

Q & A's from the Cornell University Program on Breast Cancer and Environmental Risk Factors in New York State

Alcohol and the Risk of Breast Cancer

The relationship between alcohol consumption and the risk of breast cancer is currently the focus of much research. Since alcohol consumption is a modifiable behavior, information regarding its association with breast cancer may offer women a practical way to decrease their risk of developing this disease.

Does the consumption of alcohol increase the risk of breast cancer?

The results of most studies indicate that there is a weak association between drinking alcoholic beverages and the incidence of breast cancer at low levels of consumption, and that the risk of breast cancer increases as the amount of alcohol consumed increases. In a recent summary of 63 published studies, 65% reported that consuming alcohol was associated with an increased risk of breast cancer. These studies involved different populations of women in several countries.

Women who drink alcohol may be different in many ways from those who do not drink alcohol. In order to determine if the consumption of alcohol is associated with breast cancer, researchers must take into account other factors that have been previously shown to influence breast cancer risk. For example, getting older, having a family history of breast cancer, and an earlier age at menarche (the age when a girl has her first menstrual period) are established risk factors for breast cancer. When assessing the influence of alcohol consumption on breast cancer risk, it is important for researchers to account for these as well as other potential risk factors such as diet and smoking. These factors may be more common among women who drink alcoholic beverages and may actually be contributing to the reported association between alcohol and breast cancer.

Many of the studies of alcohol consumption and breast cancer risk have taken established breast cancer risk factors into account and some have also included other types of habits and behavioral differences, such as diet and smoking. The results of most of these studies suggest that the consumption of alcohol may have an independent and direct effect on a woman's risk of developing breast cancer. However, other researchers are not convinced that alcohol is acting independently and they are continuing to analyze the relationship between alcohol and other lifestyle and personal characteristics.

How much alcohol is thought to increase the risk of breast cancer?

Researchers have reported that there is a weak association between alcohol consumption and breast cancer in women who drink one alcoholic beverage a

day. Drinking more, about 2 to 5 drinks per day, may be associated with a rate of breast cancer that is about 40% higher than the rate for non-drinkers. This level of risk is similar in proportion to that of other well-established risk factors. For example, breast cancer risk is reported to be about 25% higher in women whose age at menarche was 12 years or younger versus 15 years or older. Also, the risk of breast cancer among women whose mother or sister had breast cancer is increased about 50% or more as compared to women who do not have a family history of the disease.

Is there an age at which the consumption of alcohol has the greatest effect?

If alcohol is associated with breast cancer risk, it is important to understand whether the age at which a woman starts to drink alcohol is an important factor in this relationship. Some studies have reported that drinking before the age of 30 is more closely tied to breast cancer risk than recent or current drinking habits. Others have reported that current or recent drinking habits have a greater influence on breast cancer rates than drinking at an early age. Lifetime consumption of alcohol has also been suggested as an important factor when determining breast cancer risk. In other words, it may be the total amount of alcohol consumed during a lifetime regardless of the age at which the habit starts that is most important. Although researchers have not been able to establish the age at which consumption of alcohol has the greatest effect, drinking at any age may contribute to the risk.

Does the pattern of drinking affect the risk of breast cancer?

There are no studies that compare the effects of drinking every day to the effects of drinking only occasionally. In other words, it is not known whether drinking one drink every day, such as drinking wine with a meal, has the same relationship to breast cancer risk as binge drinking, such as having 7 drinks on a Saturday night.

What kinds of alcoholic beverages have been associated with breast cancer risk?

Some researchers reported that the consumption of beer and hard liquor, such as vodka and gin, had a greater association with breast cancer risk than the consumption of wine. Others have reported no difference in the type of alcoholic beverage consumed. Studies in European countries, such as Italy, where wine is consumed regularly at dinner, have also reported that the consumption of alcohol is associated with increased breast cancer risk. Therefore, the current evidence suggests that it is probably the alcohol in wine, beer and liquor and not some other component of these beverages that is associated with the risk of breast cancer.

How might alcohol increase the risk of breast cancer?

Several possible biological pathways by which alcohol might be acting to influence the risk of breast cancer have been suggested. Many researchers are analyzing the influence of alcohol on the levels of hormones in the body, particularly estrogen. Estrogen is important for normal development of the reproductive system, and lifetime estrogen exposure is thought to influence the development of breast cancer. In some studies, the consumption of alcohol has been observed to lead to increases in the level of estrogen in a woman's body. This overall increase in body estrogen levels may be due to an increase in the production of estrogen or a decrease in the breakdown of estrogen.

Since the studies on alcohol and estrogen are not yet conclusive, researchers are also studying other ways that alcohol may influence biological systems that affect breast cancer risk. For example, alcohol has a strong effect on the liver, an organ that helps rid the

body of potentially harmful material. If the liver is not able to function properly, it may not be able to get rid of potential cancer-causing agents (carcinogens). There is also evidence that alcohol may be acting as a co-carcinogen.

More research is needed to discover the mechanism by which alcohol may influence the risk of breast cancer. This information will help researchers determine if alcohol works alone or along with some other breast cancer risk factors.

What about the positive health effects of alcohol consumption?

Researchers have reported that women who consume light to moderate amounts of alcohol have a decreased risk of developing and dying from cardiovascular disease. Since more women are affected by and may die from cardiovascular diseases than breast cancer, the recommendations regarding alcohol and breast cancer may seem to contradict the reports regarding cardiovascular disease. The 1996 Guidelines on Diet, Nutrition and Cancer Prevention from the American Cancer Society suggest that most adults can drink, but they should limit their intake. Given the complex relationship between alcohol consumption and different diseases, any recommendations should be based on information about all health risks and benefits.

What kinds of research are needed to fully explain the relationship between alcohol and breast cancer?

- More research is needed to determine whether or not the age at which a woman starts to drink is important in determining breast cancer risk.
- Studies are needed to determine whether regular drinking during the week or binge drinking on the weekends has a greater influence on breast cancer risk.
- More research is needed to discover the mechanism(s) by which alcohol may be acting to influence the risk of breast cancer.
- More studies are needed which analyze the relationship of alcohol to other risk factors for breast cancer, such as menopausal status and hormone replacement therapy.
- Research is needed on the relationship of alcohol to other factors such as diet, body fat distribution, and genetics.

Should women drink alcoholic beverages?

The decision whether or not to drink alcoholic beverages needs to be made by a woman herself with the help of her physician. Women who have other well-established risk factors for breast cancer, such as a family history of the disease, may want to seriously consider limiting their alcohol consumption.

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An extensive bibliography on *Alcohol and the Risk of Breast Cancer* is available on the BCERF web site http://www.cfe.cornell.edu/bcerf/

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Cornell Cooperative Extension
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The program involves faculty and staff from the Cornell Ithaca campus (College of Agriculture and Life Sciences, College of Arts and Sciences, the College of Human Ecology, the College of Veterinary Medicine, the Division of Biological Sciences and the Division of Nutritional Sciences), Cornell Cooperative Extension, and the Cornell Medical College and Strang Cancer Prevention Center.

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