State of Alaska Epidemiology **Bulletin**

Copies of any bulletin may be ordered by calling the Section of Epidemiology at (907) 269-8000 or by writing to us at PO Box 240249, Anchorage, Alaska 99524-0249

Bulletin No. 24
October 6, 1995

Risks for the Development of Breast Cancer and Implications for Screening

Introduction: Breast cancer is the most commonly diagnosed cancer among women other than skin cancer and the second leading cause of cancer death among women in the United States. One out of nine women living to age 85 will develop breast cancer at sometime in her life(1). Many risk factors have been identified, but the most important risk remains increasing age. This report reviews major identified risks for breast cancer, their significance and implications for screening.

Relative Risk: Relative risk compares incidence of a disease among those with a specific factor to those without that factor. The higher the relative risk, the more strongly a factor is associated with the disease in question. The risk of breast cancer is increased among women who have a first degree relative (i.e. mother, daughter, or sister) with premenopausal breast cancer and among women who have atypical hyperplasia on breast cytologic examination (Table 1). Other identified risks are of varying significance, and altogether explain less than 30% of breast cancer risk(1).

Table 1. Relative Risk of Identified Risk Factors in the Development of Breast Cancer.

Risk Factor	Relative Risk
First degree Relative (ref. 2)	1.2
Unilat/Postmenopausal	1.8
Unilat/Premenopausal	4.0
Bilat/Postmenopausal	8.8
Bilat/Premenopausal	14.0
Two 1st Degree Relativ.	1.0
Age at First Birth (ref. 3)	1.2 - 1.9
<20 years	2.4
20-34 years	2.0
35+ years	5.0
Nulliparous	2.0
Fibrocystic Changes (ref. 4)	1.3
Atypical Hyperplasia	<2.0
Hyperplastic/no atypia	<2.0
Other Factors (ref. 1)	<2.0
Never Lactated	<2.0
Race/Ethnicity	<2.0
Age at Menarche <11 years	2.0
Age at Menopause >55 years	
Obesity/Fat Intake	
Oral Contraceptives/HRT	
Alcohol >33gms/day (ref. 5)	

Absolute Risk: Absolute risk is the rate cancer occurs in a general population and is expressed as a number of events within a specific population in a specific time period. Increasing age is strongly associated with increased risk (Table 2). The average woman has an 11% chance of developing breast cancer if she lives to be age of 85. However, 2% of the total risk occurs between birth and 50 years, 5% occurs between 50 and 70 years and a final 4% occurs from 70 to 85 years(6).

A woman who has had breast cancer is at risk for developing breast cancer again. The absolute lifetime risk of developing a second breast cancer is 30%(7).

Combining Risks: Multiple risk factors do not have an additive or multiplicative effect on breast cancer risk in most studies, with the exception of family history. Relative risk cannot be multiplied by absolute risk to yield a percent risk. A risk factor may be associated with a particular pattern of heredity or benign breast disease expressed only at a specific period of time. For example, a woman with atypia will have a risk of 1% per year for 15 years following diagnosis, then revert back to risk for age(7).

Table 2. The Average Annual Risk of Developing Breast Cancer at a Given Age in White Women	
Age	**Risk Per Year**
30	1 in 5900
35	1 in 2300
40	1 in 1200
50	1 in 590
60	1 in 420
70	1 in 330
80	1 in 290

Conclusions: Despite the research, the major risk factors for breast cancer are unknown. Over 75% of breast cancer cases in the U.S. are not associated with any currently identified risk factor(8). Even a woman with no identified risks is still at higher risk for developing breast cancer than any other specific type of cancer with the exception of lung cancer in heavy smokers(9).

Recommendations:

- All women are at risk for breast cancer and need screening.
- The single most important risk is increasing age and should be reflected in all screening activities.
- Established risk factors include family history of breast cancer, history of atypical hyperplasia, and prior history of breast cancer. Other risk factors are of indeterminate significance. Because most risk factors are not alterable based on current knowledge, secondary prevention through screening is the best strategy for reducing mortality associated with breast cancer.
- Absence of risk factors does not decrease need for screening.

References:

1. Nichols, DH. The epidemiologic characteristics of breast cancer. Clin Ob&Gyn 1994;37:925-932.
2. Satlin, RW, Rubin, GL, Webster, LA, et al. Family history and the risk of breast cancer. JAMA 1985;253:1908-1913.
3. MacMahon, B, Cole, P, Lin, TM, et al. Age at first birth and breast cancer risk. Bulletin of World Health Organization 1970;43:209-212.
4. Dupont, WD, Page, DL, Rogers, LW et al. Influence of exogenous estrogens, proliferative breast disease, and other variables on breast cancer risk. Cancer 1989;63:948-957.
5. Longnecker, MP, Newcomb, PA, Mittendorf, R, et al. Risk of breast cancer in relation to lifetime alcohol consumption. J Natl Cancer Inst 1995;71:923-929.
6. P.T. Kelly. Breast cancer risk: the role of the nurse practitioner, Nurse Practitioner Forum 1993;4: 91-95.
7. Henderson, C. Risk factors for breast cancer development. Cancer 1993;71:2127-2140.
8. Mettlin, C. The relationship of breast cancer epidemiology to screening recommendations. Cancer 1994;74:228-230.
9. Berg, JW. Clinical implications of risk factors for breast cancer. Cancer 1984;53:589-591.

(Contributed by Barbara Berner, Ed.D., FNP, Section of Epidemiology.)