Refiguring the Odds

What's a woman's real chance of suffering breast cancer?

By KATHY A. FACKELMANN

One out of every eight American women will develop breast cancer at some point in her lifetime. Or is it one in nine? Which is it? And just what is a "lifetime," statistically?

Those are the questions my editor asked me not so long ago.

As I labored to answer these queries, I became mired in the quicksand of seemingly conflicting estimates. (If you think you're confused about breast cancer statistics, don't worry, you're not alone.) In the end, I learned that a woman's lifetime risk of getting breast cancer all depends on how you do the figuring.

Who cares, anyway? Aside from my editor, you should. This year alone, breast cancer will kill an estimated 46,000 American women. Chances are, you know someone — a mother, wife, or daughter — who has been touched by this disease. A better understanding of the statistics provides some women with profound relief: Their odds of getting breast cancer appear more remote than they imagined. For others, the risk is higher than they expected. Yet, with knowledge, all women can take actions to improve their chances of catching a tumor early, when it is tiny, and thus increase the odds of beating this disease.

A couple of factors have led to the confusion. Until recently, the American Cancer Society (ACS) and the National Cancer Institute (NCI) estimated the lifetime risk of breast cancer by cutting off the analysis at age 85. Under that method, a 95-year-old who develops breast cancer doesn't get included in the calculations. Worse still, the way the numbers were presented often led to misunderstandings: Most people thought, incorrectly, that a lifetime estimate referred to a woman's immediate risk.

Now, statisticians from these two prestigious organizations have teamed up to rework the numbers. They've massaged the lifetime risk estimates. And to take the scare out of such facts and figures, they've crunched out age-specific risks that give a better picture of the chance of developing breast cancer. Their report and an accompanying editorial appear in the June 2 JOURNAL OF THE NATIONAL CANCER INSTITUTE.

Still, any way you figure it, breast cancer remains a scourge.

"Whether one says one in eight or one in nine, the point is that breast cancer is a relatively common risk for a woman," says statistician Carol K. Redmond of the University of Pittsburgh. Researchers don't want to trivialize the threat of breast cancer, which is the second leading cause of cancer death for American women. On the other hand, they don't want to frighten women or their families unnecessarily, adds ACS epidemiologist Catherine C. Boring.

The lifetime risk of breast cancer has been creeping steadily upward. In 1980, ACS said a woman's risk of getting breast cancer stood at one in 11. By 1991, ACS reported that one woman in nine would develop the disease during her lifetime. In the new report, Eric J. Feuer of NCI, Boring, and their colleagues recalculate the numbers and set the lifetime risk at one in eight. Who wouldn't be worried?

While there's no arguing with the fact that the breast cancer incidence is rising, Boring says the most recent change in risk is more a reflection of a change in the statistical method than an actual surge in new cases. ACS' 1991 calculation of lifetime risk looked only at breast cancer data up through age 85. Statisticians at ACS picked this age, a point well above the average life expectancy of 79 years for U.S. women, because they wanted to make sure the majority of cases were included, she says. Yet, from a statistician's point of view, lifetime risk is the probability of getting breast cancer from the time of birth until death.

In this year's calculation, Boring, Feuer, and their team factored in the small but real probability of living nearly a century or longer.

"If you want to call something 'the lifetime risk of breast cancer,' it should include all possible lifespans," Feuer argues. It was when the team gauged lifetime risk with the small group of very old seniors in the mix that the one-in-eight number popped up. If they looked only at incidence in women up through age 85, the lifetime risk fell back to the 1991 figure — one out of nine.

That doesn't mean that the number crunchers expect everyone to live to such ripe old ages. It does mean that the lifetime risk estimate includes data on women who develop breast cancer into their nineties and beyond, Feuer says.

So do the new figures reflect an upsurge of breast cancer in the United States? "Everybody got hysterical when the projections went from one in 10 to one in nine and then — Oh my god! — it went to one in eight," says G. Marie Swanson at Michigan State University in East Lansing. Swanson, who wrote the editorial accompanying the latest risk calculation, says she remembers getting phone calls after the new statistic came out: "People would call me, and I would laugh about it, because the statistics are not that different."

How's that again? As it turns out, the difference between one in eight and one in nine represents only a moderate change. Here's another way of stating it: The lifetime breast cancer risk went from the 1991 figure of 11.5 percent to 12.57 percent in 1992 — an increase of about one case of cancer for every 100 women.

Surprisingly (at least to nonstatisticians), a lifetime risk of one in eight does not mean that the average woman has a one-in-eight chance of getting breast cancer next year. It does mean that if you line up 800 women in a room, about 100 will develop this disease before they die, Feuer points out.

Averaging out the data over an entire lifetime may foster an inaccurate perception of risk. As a result, older women don't appreciate the magnitude of their own threat, which rises with age. At the same time, younger women believe they run a higher risk than they really do.

"Fear is a common reaction to reports of increasing incidence of breast cancer. Women at increasingly younger ages are frightened that they will develop breast cancer," Swanson adds.

For younger women, that fear can be extreme. Indeed, some with a family history of breast cancer have had surgeons remove their healthy breasts in an attempt to beat the cancer they believe they will eventually develop, Swanson notes.

Physicians are seeing more women in their thirties with breast cancer, a fact

that has fueled a perception that younger women are experiencing an epidemic of breast cancer. Yet, notes ACS epidemiologist Lawrence Garfinkel, incidence rates of breast cancer for women age 30 to 39 remained flat between 1975 and 1987, the most recent span for which statistics are available. (For women in their forties, breast cancer incidence has increased slightly during that time period.) What has changed substantially is the sheer number of baby boomers — those Americans born between 1946 and 1964.

"What is happening is that there are a lot more women in that age group," Feuer says.

Overall, however, breast cancer rates are on the rise for the entire population, largely because of cases that occur in older age groups. Feuer, Boring, and their colleagues point out that the breast cancer incidence increased at a rate of more than 1 percent per year from 1940 to 1982. Starting in 1982, those rates went up sharply to about 4 percent a year, Feuer says. However, the researchers attribute some of that increase to mammography, a type of low-dose X-ray that allows tumors to be detected earlier now than in the past.

What's troubling is that researchers say they cannot explain a good chunk of the long-term rise in breast cancer incidence. The unexplained increase occurs mostly among older women, whose breast cancer may be caused by factors that take a long time to exert their effects. Indeed, some scientists wonder whether pollutants that have estrogenic effects may explain some of the rise in breast cancer rates (SN: 7/3/93, p.10).

Feuer and his colleagues tackled the statistics again to do away with the perception of imminent jeopardy. "Sometimes when people think of risk, they think of their risk next year," he says.

Indeed, the trouble with calculating lifetime risk is that statisticians must estimate the risks a person will encounter from birth to death. However, risk factors for breast cancer can change dramatically over such long periods of time. "We really have no idea what those risks are going to be 70 or 80 years in the future," Feuer says.

"It may be more realistic to take a shorter interval [that] reflects what your risk is in the next 10 years," he says. The team went about doing just that. They discovered that a 20-year-old faces a one in 2,500 risk of developing breast cancer by the time she reaches her thirtieth birthday. That 10-year threat of breast cancer jumps to one in 63 for a 40-year-old woman and to one in 28 for a 60-year-old.

Of course, those statistics are based on the general population, Feuer adds. Thus, they underestimate the threat for women of any age who have one or more risk factors, such as a family history of breast cancer, especially in a first-degree relative such as a mother, sister, or daughter.

Swanson contends that many physicians overemphasize this familial risk. Indeed, a Harvard study published earlier this month suggests that a family history of breast cancer isn't as strong a risk factor as previous studies had indicated (SN: 7/24/93, p.52). There's no question that there are rare families in which an inherited tendency to develop breast cancer results in very high risk, says study coauthor David J. Hunter of the Harvard School of Public Health in Boston. However, for most women, a maternal history of breast cancer increases the odds only moderately, he says.

Some of the risk factors — such as an early menarche and a late menopause — are biological facts of life not subject to change, Boring notes. Furthermore, although fairly common, these factors don't appear to be particularly strong influences on the development of breast cancer, she says.

Does race make a difference? It does, says Swanson. She notes that women of all races must take a personalized approach to minimizing their risk of developing breast cancer. For example, breast cancer incidence rates are higher for black women in their thirties and forties than for white women of the same age. By the sixth decade of life, however, that disparity flips, and black women face a lower risk of breast cancer compared with their white counterparts.

"Too often, statistics give the impression of homogeneity of risk in a population simply because we quote a single estimate to women," Swanson says.

Two risk factors for breast cancer are immutable: being a woman and getting older, Swanson says. Women are at greater risk than men because they've got more breast tissue and more estrogen, which fuels the growth of certain breast cancers. (While men do develop breast cancer, they do so rarely.)

As a woman ages, the dividing cells in her breasts are more likely to accumulate errors in their DNA. Eventually, these genetic errors can lead to uncontrollable cell growth and cancer.

Of course, not every woman who grows old will develop breast cancer. Indeed, researchers believe that the disease results from a combination of genetic and environmental factors. Even though researchers have learned much about the disease and are testing everything from a low-fat diet to an experimental hormone therapy, the fact remains that there is no foolproof way to prevent breast cancer, Swanson notes.

For now, most public health experts urge women to examine their own breasts every month for any signs of a tumor. The ACS suggests that women get their first mammogram at age 40. Physicians can then compare that X-ray to future mammograms for any evidence of trouble, a strategy that improves a woman's chance of getting a diagnosis when a tumor is at a curable stage.

Prior to age 40, experts do not advise a mammogram, simply because the risk of developing breast cancer for most women is quite small, Swanson says.

Because the risk rises sharply after age 40, the ACS advises women age 40 to 49 to schedule a mammogram every one or two years. And from age 50 on, yearly mammograms are suggested.

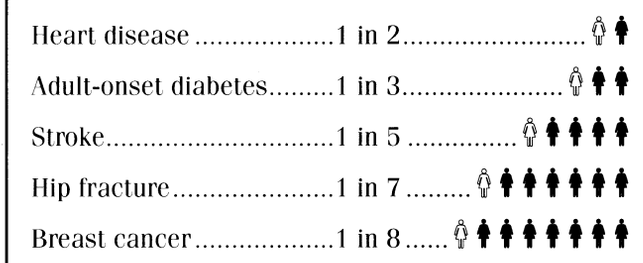
The emphasis on mammograms is not meant to undercut the message that women should do breast self-examinations each month. Not every tumor shows up on these X-ray photos, Swanson points out, and some that do are missed by radiologists reading the films (SN: 6/19/93, p.392). By following a commonsense approach, most women can improve their chances of finding a tumor very early.

The statistics seem to bolster that positive outlook.

Although the lifetime risk of developing breast cancer has risen to one in eight, the risk of dying of the disease has remained relatively flat since the 1970s. "What that means is that a lot of women who get breast cancer don't die from it," Feuer says. "And that's good news." □

LIFETIME ODDS

The U.S. woman's risk of developing these major diseases during a lifetime



When American women think about lifetime risk, they usually focus on breast cancer. Yet the surprising fact is that they are more likely to develop heart disease than breast cancer over a lifetime. Furthermore, statistics show that heart disease tends to be more lethal than breast cancer.

Data presented Feb. 1993 at NCI's workshop on breast cancer screening