The Annual Pap Smear: An Idea Whose Time Has Gone?

Because cervical cancer develops very slowly many women may not need expensive annual screening for the cancer

That all women should have a Pap smear every year is an idea ingrained in the public consciousness. The test, which is aimed at detecting cervical cancer in its early, curable stages, has been heavily promoted, especially by the American Cancer Society (ACS), as a safe and effective way to save lives. American women clearly have accepted that view. In 1974, the latest year for which data are available, more than 56 million women over the age of 17 had Pap smears, according to data compiled by the National Center for Health Statistics. About 35 million of them had waited 1 year or less since their previous test, with another 13.5 million having waited 1 to 2 years. All in all, if any medical procedure might appear to be beyond criticism, the annual Pap smear would be it.

As it turns out, however, that is not quite the case. A few critics go so far as to say that the test does not save lives at all, a contention refuted by current evidence. But the main criticism, in an age when the soaring cost of health care has engendered universal concern, is that the costs of annual screening for cervical cancer are too high in comparison to the rather small number of lives saved.

A recent article by Anne-Marie Foltz of New York University and Jennifer Kelsey of Yale University School of Medicine in *The Milbank Fund Quarterly, Health and Society* illustrates the latter criticism. As Foltz summarizes their conclusions, "Our analysis does not add up to a rousing endorsement of annual screening. I expected the Pap smear to do better than it did."

Foltz and Kelsey point out that cervical cancer is not a major cause of death among women in the Western countries. It is only eighth on the list of cancers causing the most deaths in U.S. women, trailing far behind the leaders, cancers of the breast, colon and rectum, and lung. In 1976, about 5500 women died of cervical cancer in this country.

The costs of screening are hard to come by, but they are probably high. One study, carried out by the Connecticut division of the ACS, estimated that each case of cervical cancer detected by the screening program in that state in 1974 cost more than $3300. This did not include the cost of the biopsies required to confirm the diagnosis in all the women whose Pap smears were positive.

Foltz and Kelsey think that the annual Pap smear has become so entrenched in this country partly because it has been so heavily promoted and partly because so much of the cost is borne by the private individual. In England and Canada, where the governments bear practically all the costs, annual tests are not recommended, at least for low-risk women.

Foltz is careful to point out that she and Kelsey are not recommending elimination of Pap smears but rather reexamination of the question of who should get them and when. In their view, that analysis should include a consideration of cost-effectiveness.

Meanwhile, the ACS is not exactly upset by suggestions that annual Pap smears are not needed by all women. As a matter of fact, the society quietly changed its policy about 2 years ago. Now, instead of recommending "annual" Pap smears, the ACS merely advises "regular" exams, with the decision as to what constitutes regular left to the woman and her physician. According to Arthur Holleb, senior vice president for medical affairs of the ACS, however, the change was not motivated by the cost but by a desire to stop treating patients on a uniform basis. "People prefer to be treated as individuals," says Holleb, "and I think it is better medicine."

The mills of the bureaucracy grind somewhat more slowly. The National Cancer Institute (NCI) has been trying to develop an official policy on Pap smears for some time. According to Margaret Sloan of NCI, everyone agrees that all sexually active women should have a minimum of three annual smears. But what to do after that if all three are negative is in dispute. Some NCI scientists still favor annual exams, whereas others think that one every 3 years is adequate. The institute plans to hold a conference later this summer to resolve the matter.

The decision of the ACS to back off from annual Pap smears was buttressed by the report of a task force commissioned by the Canadian government to evaluate the use of screening for cervical cancer and make recommendations on how to best implement a screening program. The report, christened the "Walton report" after task force chairman R. J. Walton of the University of Manitoba, concluded that the development of invasive cervical cancer is slower than previously thought.

The progression from the early stages, in which the cancer cells are localized to the outer layer of cells lining the uterine cervix, to the late stage, in which the cancer cells have invaded the underlying, muscular layers of the uterus, takes up to 35 years. Since spread to other tissues—the real danger of cancer—is not likely before the invasive stage is reached, the Canadian task force concluded that annual exams to detect this slowly developing condition were not necessary for women whose risk of developing cervical cancer is low.

The Canadian task force recommends a Pap smear for all women over 18 who have had sexual intercourse. If the first test is negative, another smear should be taken 1 year later to guard against the probability that the original test was in error. If both are normal, low-risk women should continue to have Pap smears—but at 3-year intervals up to age 35 and then at 5-year intervals up to age 60. Women over 60 who have had repeated normal smears need to have no more since they are unlikely to develop invasive cancer during their life-span.

The situation is different for high-risk women, however. A great deal of evidence suggests that some women, usually members of the lower socioeconomic classes and those who begin sexual activity at an early age and have many partners, have a high risk of cervical cancer. In particular, women with a history of genital herpes infections may be at high risk. The virus causing this infection is transmitted by sexual contact. There is evidence suggesting that the virus, and not some other factor associated with sexual activity, may be the actual cause of cervical cancer. The Walton report recommends annual Pap smears only for high-risk women, a position that is not

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The Dead Sea Is Alive and, Well . . .

Well, not exactly alive, but undergoing a geological transformation that has apparently not occurred for thousands of years, and perhaps never before. This past winter, the Dead Sea "turned over"—that is, the very salty bottom layer of the sea and the less salty upper layer combined to form one homogeneous body of water. This means, according to Joel Gat of the Weizmann Institute in Rehovot, Israel, that many of the geochemical processes that previously occurred in the lake are gone and that others have taken their place. "A whole new ball game is going on now," he says.

The Dead Sea stretches for about 85 kilometers along the border between Israel and Jordan, its surface some 390 meters below sea level. Its name derives from the fact that few living organisms can survive in its extreme saltiness; it is about nine times as salty as the ocean. It is that salty because the Jordan River continually washes small quantities of salts into the sea while water is lost from it only by evaporation. The previously existing stratification arose from the same source.

For hundreds of years, Gat says, fresh water from the Jordan constantly fed the less salty layer of the sea, which occupied roughly the top 40 meters of the 320-meter-deep body of water. Because the amount of water entering the lake was more or less equal to the amount lost by evaporation during the region's extremely hot and dry summer, the lake maintained its stable, stratified state. Or at least it did until man began interfering with the flow of the Jordan.

Shortly after the establishment of Israel as a state, water was diverted from the Jordan for agricultural and industrial use. The river's flow was reduced to a virtual trickle, Gat says, and the sea's upper layer began to recede by evaporation. As the water evaporated, the density of the upper, less salty layer approached that of the older and deeper waters. By 1975, he says, it was clear that the layers would mix, and an international team of investigators began monitoring the situation. This past February, they confirmed that the complete overturn had occurred. The layered structure was gone, water temperature was uniform (except for the immediate surface, which was warmed by the sun), and concentrations of trace metals such as iron, manganese, and lead were identical from the surface to the bottom.

The most notable change in the Dead Sea, now that circulating waters carry oxygen to the bottom, is the disappearance of hydrogen sulfide, a constituent that made bathing in it comparable to a so-called "sulfur spring cure." A more important change is the increased precipitation of salts (accompanying photo) at the Dead Sea Works, one of the world's major producers of potash and other industrial chemicals. Technicians there have had to revise many processes in order to keep pumps and other equipment from being overwhelmed by the increased salt production.

The flow of the Jordan is not likely to increase at any time soon, and hence investigators will have plenty of time to study the geochemical implications of the turnover. Israeli planners are, however, considering the construction of a canal connecting the Dead Sea to the Mediterranean Sea; the difference in elevation between the two bodies of water could then be used for electric power generation. If such a plan is implemented, the Dead Sea will receive a renewed influx of much less salty water, Gat says, and will probably return to its historic, layered state. The ultimate change in the surrounding countryside will probably be small or negligible, but, if nothing else, the incident will have proved at least one thing: Even a dead sea can turn over as a result of man's despoliation of the environment.

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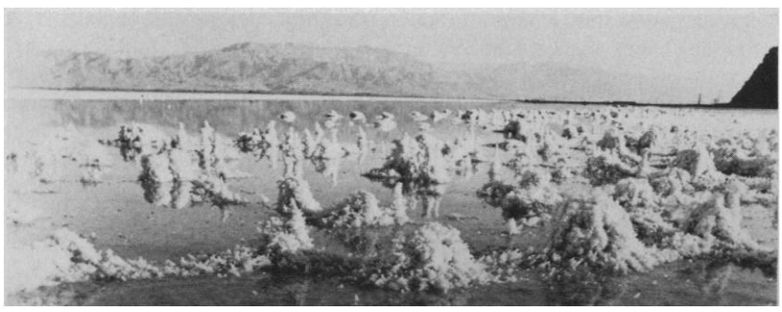

far from the one now held by the ACS.

Despite the backing off from recommendations of annual smears for all, there is little inclination to eliminate them completely, for the test does appear to be saving lives, contrary to what some critics have maintained. The mortality rate from cervical cancer was already dropping in this country in the late 1940's, before screening became popular, and the critics suggest that Pap smears have made little or no contribution to the continuing decline.

According to Holleb, this natural decrease is only one of the factors producing the drop in the cervical cancer death rate in the past three decades. Better surgical techniques for hysterectomy, the most common therapy for the cancer, have also contributed. And so has the use of Pap smears for screening.

A number of studies comparing screened and unscreened populations of women support Holleb's contention about Pap smears. A recent example is a study being conducted in Iceland under the aegis of the Cancer Society there.

According to Nicholas Day of NCI, who is collaborating in the study, the death rate from cervical cancer in Iceland, unlike that in the United States, had been gently rising at the time the study began in 1964. Since then the mortality rate has declined, with the decrease particularly marked since 1970. The mortality rate of the screened women—about 85 percent of the total—is now essentially zero. That of the unscreened women is, if anything, slightly higher than the 1965 rate. The Iceland results, says Day, also support the contention that annual Pap smears are not necessary, at least for women who have had two consecutive negative tests.

Day points out that other studies, including those carried out in Finland and in Scotland, have produced similar findings. He concludes, "If a screening program is properly organized and includes most of the population, you should see a decrease in both the incidence and the mortality of cervical cancer."

Day points out, however, that Iceland with its small and relatively homogeneous population is an ideal place for carrying out such a program. In the United States, with a large, diverse population, the situation is far from ideal. Especially worrisome is the fact that women of the lower socioeconomic classes, who are most likely to need annual smears, are the least likely to get them. For the Pap smear does do some good, even if low-risk women do not need to make it an annual event.

—JEAN L. MARX