THE HEALTH BENEFITS AND COST-EFFECTIVENESS OF SCREENING AND TREATMENT FOR CERVICAL CANCER

In 1993, 13,500 American women were diagnosed with cervical cancer, and 4,400 women died from it (Broder, 1994). Cervical cancer, however, does not have to be fatal. A pap smear or cervigram can detect abnormal cervical cell changes when the cancer is still curable.

- Screening programs reduce cervical cancer deaths by approximately 90 percent.
- Screening for cervical cancer costs less per year of life saved than treating a man for high blood pressure for one year.
- Screening for cervical cancer and treating the low-income or previously-unscreened elderly results in net savings of $5,907 for every 100 screens.

Some groups of women are disproportionately affected by cervical cancer:

- Mortality from cervical cancer disproportionately affects poor women, elderly women, and non-whites, according to data from the population-based Surveillance, Epidemiology, and End Results cancer registry enumeration system (Celentano, 1990).

- Nonwhite women have a mortality rate nearly 50 percent higher than those of white women (Celentano, 1990).

- Elderly women have lower screening rates than their younger counterparts: a San Diego survey of 819 women 65 years old or older in an HMO found that only 36 percent of women over the age of 80 have annual pap smears, compared to 52 percent of women between the ages of 65 and 69 (Mayer et al., 1992).
HEALTH BENEFITS OF EDUCATION, SCREENING, AND OUTREACH FOR CERVICAL CANCER

Changes in diet may reduce the risk of cervical cancer:

- A diet rich in dark green or yellow vegetables, vitamin C, and vitamin E was associated with a reduced risk of cervical cancer, according to a study of 416 women in Seattle (Verreault, 1989). Therefore, education and counseling in nutrition would be helpful.

Screening reduces mortality from cervical cancer:

- Screening programs reduce deaths from cervical cancer for women between the ages of 35 and 64 by approximately 90 percent, according to the International Agency for Research on Cancer’s comprehensive analysis of studies on cervical cancer conducted in eight countries (Eddy, 1990). Women screened at annual intervals experience a 93.5 percent reduction in mortality. Three-year and five-year screening schedules yield 90.8 percent and 83.6 percent reductions in mortality, respectively.

- Screening detects cervical cancer in its earlier stages, increasing the likelihood of survival. Five-year survival rates are 77 percent when cancer is detected in stage one, 56 percent in stage two, 31 percent in stage three, and nine percent in stage four, according to 1989 data from the American Cancer Society (Celentano, 1990).

Organized mass screening programs result in a substantial decrease in the incidence of and mortality from invasive cervical cancer.

- A cervical cancer prevention program in Newark, New Jersey reduced the number of invasive tumors from 227 to 83 for blacks and from 104 to 41 among whites, according to data from the New Jersey tumor registry and health facilities of the Greater Newark area (Holland et al., 1993).

- Women aged 60-69 experienced a 50 percent reduction in mortality from cervical cancer, after Finland implemented a nationwide program that screened women at five year intervals. For women in age groups 30-34 and 54-59, there was an 80 percent reduction in mortality from cervical cancer (Louhivuori, 1991).
Outreach programs can increase the number of women screened for cervical cancer:

- Reminding women to be screened increases screening rates and cancer detection, according to a Canadian study based on the medical records of 1,587 women ages 18 to 35 who were overdue for screening at Ottawa Civic Hospital. This study divided the women into four groups and found that 26 percent of women of the first group were screened after they received a reminder letter, 20 percent of the second group were screened after receiving a reminder phone call, and 16 percent of the third group were screened after their physicians were notified that they needed to be tested. Only 14 percent of the control group, which received no reminders, was screened (McDowell et al., 1989).

COST-EFFECTIVENESS OF SCREENING FOR CERVICAL CANCER

Cost-effectiveness is determined by the ages of the women screened, the frequency of the screening interval, the number of screens performed, the costs of screening and treatment, the participation rate, the prevalence of cervical cancer in the population, the sensitivity of the pap smear, and the length of the follow-up period when results are assessed. More frequent screening schedules usually detect more cancers and cost more money.

Screening for cervical cancer is cost-effective, compared to other health interventions:

- The cost per year of life saved by cervical cancer screening at three year intervals is between $18,500 and $28,600 (1990 dollars), according to American and Dutch computer-simulation studies (Celentano, 1990). This is comparable to the $31,284 cost per year of life saved (1990 dollars) of treating a 40 year old man for high blood pressure (Mushlin and Fintor, 1992).

Screening can be made more cost-effective:

- Increasing the range of women screened increases the numbers of life-years saved and yields better cost-effectiveness, according to a computer-simulation using data from Canada and the Netherlands. Issuing a reminder invitation is a cost-effective instrument for improving participation (Koopmanschap, 1990).

- The cervigram was found to be more cost-effective than the pap smear in identifying cervical cancer, according to a Los Angeles study of 3,271 private hospital patients ages 18 to 50 (Tawa et al., 1988).

- Mobil screening programs are a more cost-effective means of providing cervical cancer screening than screening centers or private physicians, reports a Japanese study of over 130,000 women thirty years of age or older (Takenaga et al., 1985).

- Following up abnormal pap smears with a colposcopy program to determine which patients actually needed a biopsy was found to save $573,000 and reduce mortality in patients aged 35 to 76, according to a 1981 5-year study of a health department serving rural Alabama (Celentano, 1990).
• The cost per year of life saved by screening for cervical cancer at six year intervals is between $11,800 to $14,500, according to a computer-simulated study of a population of women in the Netherlands over the period 1988-2015 (Koopmanschap et al., 1990).

**Screening elderly women is cost-effective:**

• A one-time screen of women at age 65 costs a projected $1,595 per year of life saved, according to a computer-simulated study of a cohort of American women age 65 and over (Celentano, 1990).

• Triennial screening among the elderly reduces mortality among the elderly by approximately 74 percent and costs between $2,254 (1992 dollars) and $3,325 (1990 dollars) per year of life saved, according to computer-simulated cohorts of American women over age 65 (Celentano, 1990; Fahs et al., 1992).

• Annual cervical cancer screening among the elderly costs between $7,345 (Fahs et al. 1992) and $16,223 (Celentano, 1990) per year of life saved, according to computer-simulated studies of American women over age 65.

**Screening the low-income or previously-unscreened elderly saves money as well as years of life:**

• Screening for cervical cancer among the unscreened elderly saves money: a Markov model determined that if triennial screening is targeted to women 65 or older who have not had regular screening, the program will save money as well as years of life (Fahs et al., 1992).

• Every 100 screens among low-income elderly women saves $5,907 (1988 dollars) and 3.7 years of life, according to a study of 816 patients at the Medical Primary Care Unit in New York who had not been screened in the past (Mandelblatt and Fahs, 1988).

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IWPR has produced eight fact sheets and annotated bibliographies on the benefits and cost-effectiveness of women's preventive health services relating to breast cancer, cervical cancer, domestic violence, family planning, mental health, prenatal care, osteoporosis, and sexually transmitted diseases. Each fact sheet/bibliography pair is available from IWPR for $5.00; the entire Kit, which includes all topics and comes in a three-ring binder, is available from IWPR for $20.00. Members of IWPR receive discounts on this kit and all publications. Please contact IWPR for information on membership and bulk order discounts.