



EPI Updates

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Cervical Cancer Incidence in Illinois, 1986 to 1997

The Pap smear has had a profound effect on reducing cervical cancer incidence and mortality over the past three decades. However, despite the availability of exceptional screening and treatment technology, cervical cancer persists, and decreases in incidence have begun to plateau. Racial and ethnic disparities exist, with black women experiencing twice the incidence rate of white women and Hispanic women having higher rates than non-Hispanics. Ongoing research efforts include development of a vaccine for human papillomavirus (HPV), the primary risk factor for cervical cancer, and assessment of potential co-factors that act in conjunction with HPV to increase the risk of developing cervical cancer.

Table 1 shows the number of cases of invasive cervical cancer that were diagnosed from 1986 to 1997.

Table 1 **Number of Invasive Cervical Cancer Cases by Race and Ethnicity, Females, Illinois, 1986-1997**

	1986	1987	1988	1989	1990	1991	1992	1993	1994*	1995*	1996*	1997*
All Women	729	749	739	652	740	720	670	735	652	737	749	691
Race												
White	553	561	531	469	532	521	515	539	446	523	561	525
Black	154	175	173	161	184	165	131	172	182	177	149	144
Asian/other	13	9	17	15	17	15	14	13	17	30	24	15
Ethnicity												
Hispanic	n/a	n/a	n/a	43	58	73	72	70	72	68	83	82
Non-Hispanic	n/a	n/a	n/a	609	682	647	598	665	580	669	666	609

Source: Illinois Department of Public Health, December 1999

*Death certificate clearance instituted.

The age-adjusted incidence rates of invasive cervical cancer among Illinois women are shown in Table 2. Since the completeness of the Illinois State Cancer Registry has increased steadily since its inception, from an estimated 86 percent in 1986 to 99 percent in 1997, rates in earlier years are likely to have been higher than presented here. Since

1986, the first year statistics were available for Illinois, the incidence of cervical cancer appears to have remained approximately the same from 10.9 cases per 100,000 to 9.2 cases per 100,000 in 1997.

To account for the increase in registry completeness in the trend analysis, incidence rates were adjusted for estimated percent completeness. These adjusted rates were used in the calculation of estimated annual percent change (EAPC). As shown above, Illinois women in all race groups had a 0.1 percent per year increase in the incidence of invasive cervical cancer, which was not statistically significant. The last column demonstrates that women of all race groups in the SEER program experienced a significant decrease of 1.5 percent per year ($p < 0.05$).

White women in Illinois had a non-significant 0.4 percent annual increase in the incidence of invasive cervical cancer. White women in the SEER program experienced a statistically significant 1.6 percent annual decrease ($p < 0.05$).

Similar to the national pattern, black women in Illinois have an age-adjusted incidence rate of cervical cancer that is twice as high as white women. There was a 1.2 percent decrease per year for black women in Illinois, which was not statistically significant. Black women in SEER had a 3.3 percent annual decrease, which was statistically significant ($p < 0.05$). The decline in Illinois black women is not keeping pace with the national trend, but may be closing the gap between the races.

An EAPC was not calculated for Asian/other women in Illinois due to the low case count in 1986, 1987, 1992 and 1993. In SEER, Asian/other women experienced a non-significant 1.1 percent decrease per year.

Hispanic women in Illinois had a 1.3 percent annual increase of invasive cervical cancer, while non-Hispanic women in Illinois had a 0.6 percent annual increase. Neither was statistically significant. Information on Hispanic ethnicity is not available in SEER.

Table 2 Invasive Cervical Cancer Age-adjusted Incidence Rates* and Estimated Annual Percentage Change* (EAPC), by Race and Ethnicity, Females, Illinois and SEER, ^,^ 1986-1997

													EAPC	
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	Illinois ^s	SEER
All Women	10.9	11.1	10.7	9.5	10.8	10.0	9.4	10.2	9.0	10.1	10.1	9.2	+0.1	-1.5**
Race														
White	9.6	9.8	9.1	8.1	9.2	8.6	8.6	9.1	7.5	8.5	9.2	8.4	+0.4	-1.6**
Black	18.7	20.2	19.5	18.1	20.9	17.6	13.9	17.3	18.7	18.4	14.7	13.8	-1.2	-3.3**
Asian/other	^	^	13.3	11.5	11.0	10.3	^	^	9.4	15.7	12.5	6.6	^	-1.1
Ethnicity														
Hispanic	n/a	n/a	n/a	14.1	18.0	22.7	20.2	17.5	17.3	16.2	18.9	16.3	+1.3	n/a
Non-Hispanic	n/a	n/a	n/a	9.4	10.5	9.5	8.8	9.8	8.5	9.7	9.6	8.7	+0.6	n/a

Sources: Illinois Department of Public Health, December 1999; Surveillance, Epidemiology and End Results (SEER) program, August 1999

*Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard population.

^Estimated annual percent change (EAPC) was determined by fitting a regression line to the natural logarithm of the rates using calendar year as a regression variable, i.e., $y = mx + b$ where $y = \ln(\text{rate})$ and $x = \text{calendar year}$. The EAPC was calculated as $100 \cdot (e^m - 1)$. The null hypothesis stated that the slope of the line in the above equation was equal to zero or that the rate was not changing.

^^The SEER program designates nine geographic areas to monitor the impact of cancer in the general population.

§For the Illinois EAPC calculations, expected age-adjusted incidence rates for years the registry had less than 95percent reporting completeness (1986-1993) were used.

^Rates based on fewer than 15 cases were not calculated due to instability of the results.

Table 3 shows that the incidence of invasive cervical cancer is expected to increase to 718 cases in 2001.

Table 3	Projected Cancer Incidence*, Invasive Cervical Cancer, Females, Illinois, 1998-2001			
Site	1998	1999	2000	2001
Invasive Cervical	695	705	712	718

Source: Illinois Department of Public Health, January 2000

*Details of this methodology can be found at <<http://www.idph.state.il.us/about/epi/index.htm>>.

Table 4 demonstrates that over half of invasive cervical cancer cases are diagnosed in the local stage. However, the proportion found at the local stage decreased from 59.7 percent in 1986 to 51.8 percent in 1997, while the percent diagnosed in the regional stage increased from 27.7 to 36.2 during the same time period. These data provide no evidence that significant downstaging is occurring by earlier detection of cervical cancer cases. Nearly all regional and distant stages are preventable with screening and compliance with treatment recommendations. To further effect a decline in mortality, regular screening visits must occur.

Table 4	Percent Distribution of Invasive Cervical Cancer Cases by Stage of Disease at Diagnosis, Females, Illinois, 1986-1997											
Stage	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
local	59.7	55.3	54.3	53.7	51.6	58.2	52.4	57.0	52.8	53.2	51.9	51.8
regional	27.7	31.9	31.0	29.9	31.5	26.7	32.7	31.2	29.8	30.9	32.7	36.2
distant	8.0	7.7	8.5	10.4	10.1	9.2	7.9	6.7	8.3	7.3	6.9	7.0
unknown	4.7	5.1	6.2	6.0	6.8	6.0	7.0	5.2	9.2	8.6	8.4	5.1

Source: Illinois Department of Public Health, December 1999