

Chapter 14

Cancer of the Cervix Uteri

Carol L. Kosary

INTRODUCTION

Despite the existence of effective screening through the use of Pap smears since the 1950's, there were 9,710 estimated cases of invasive cervical cancer and 3,700 deaths in 2006 (1). This makes cervical cancer the 14th leading cancer in women and the 15th leading cancer death in 2006 (1). The cervical uterine cancer incidence rates for white women are lower than those for black women (2). The incidence rates for both blacks and whites have been decreasing for many years (2). The three most common histologic types are squamous, adenocarcinoma, and adenosquamous. Five-year survival of cancers of the cervix uteri have increased slightly over time (2).

MATERIALS AND METHODS

The NCI contracts with medically-oriented, nonprofit institutions located in specific geographic areas to obtain data on all cancers diagnosed in residents of the SEER geographic areas. SEER collects data on all invasive and in situ cancers except basal cell and squamous cell carcinomas of the skin (of non-genital anatomic sites) and in situ carcinomas of the uterine cervix. SEER actively

follows all previously diagnosed patients on an annual basis to obtain vital status allowing the calculation of observed and relative survival rates.

This analysis is based on data from 12 SEER geographic areas which collectively cover about 14% of the total US population. The areas are the States of Connecticut, Iowa, New Mexico, Utah, and Hawaii; the metropolitan areas of Detroit, Michigan; Atlanta, Georgia; San Francisco, San Jose, and Los Angeles, California; Seattle, Washington; and 10 counties in rural Georgia. Los Angeles contributed data for diagnosis years 1992 to 2001, all other areas for 1988-2001.

Between 1988-2001, there were 95,353 cases of cancer of the cervix uteri diagnosed in SEER. The following were excluded from the analysis: patients for whom cervical cancer was not the first primary, cases identified through autopsy or death certificate only, persons of unknown race, alive with no survival time, patients less than 20 years old, in situ cases, cases without microscopic confirmation, sarcomas and carcinoids. After these exclusions, 21,431 cases remained for analysis (Table 14.1).

Table 14.1: Cancer of the Cervix Uteri: Number of Cases and Exclusions by Reason, 12 SEER Areas, 1988-2001

Number Selected/Remaining	Number Excluded	Reason for Exclusion/selection
95,353	0	Select 1988-2001 diagnosis (Los Angeles for 1992-2001 only)
91,957	3,396	Select first primary only
91,824	133	Exclude death certificate only or at autopsy
83,929	7,895	Exclude unknown race
36,272	47,657	Exclude alive with no survival time
35,764	508	Exclude children (Ages 0-19)
21,789	13,975	Exclude in situ cancers
21,622	167	Exclude no or unknown microscopic confirmation
21,533	89	Exclude sarcomas
21,467	66	Exclude carcinoids
21,431	36	Exclude stromal sarcomas

Staging

Uterine cervical cancer staging by the Federation Internationale de Gynecologie et d'Obstetrique (FIGO) and the American Joint Committee on Cancer (AJCC) third edition are in the AJCC 3rd edition (3):

Stage I is carcinoma strictly confined to the cervix; extension to the uterine corpus should be disregarded

Stage IA: Invasive cancer identified only microscopically. Invasion is limited to measured stromal invasion with a maximum depth of 5 mm and no wider than 7 mm.

Stage IB: Clinical lesions confined to the cervix or preclinical lesions greater than stage IA.

Stage II is carcinoma that extends beyond the cervix but has not extended onto the pelvic wall. The carcinoma involves the vagina, but not as far as the lower third.

Stage IIA: No obvious parametrial involvement. Involvement of up to the upper two thirds of the vagina.

Stage IIB: Obvious parametrial involvement, but not onto the pelvic sidewall.

Stage III is carcinoma that has extended onto the pelvic sidewall.

On rectal examination, there is no cancer-free space between the tumor and the pelvic sidewall. The tumor involves the lower third of the vagina. All cases with a hydronephrosis or nonfunctioning kidney should be included, unless they are known to be due to other causes.

Stage IIIA: No extension onto the pelvic sidewall but involvement of the lower third of the vagina.

Stage IIIB: Extension onto the pelvic sidewall or hydronephrosis or nonfunctioning kidney

Stage IV is carcinoma that has extended beyond the true pelvis or has clinically involved the mucosa of the bladder and/or rectum.

Stage IVA: Spread of the tumor onto adjacent pelvic organs.

Stage IVB: Spread to distant organs

Since the emphasis is on extension, a SEER modified version of stage was used in which positive lymph nodes went to N1 and Stage IIIB but unknown lymph node involvement was ignored, i.e. treated like N0.

RESULTS

Age and Race

Of the 21,431 adult cases, 56.9% were diagnosed under age 50 (Table 14.2). Almost 50% were between the ages of 30-49 years. The age distribution for white women

Table 14.2: Cancer of the Cervix Uteri: Age Distribution by Race, 12 SEER Areas, 1988-2001

Age Group (Years)	Total		White		Black		Other	
	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent
Total	21,431	100.0	16,196	100.0	2,798	100.0	2,437	100.0
20-29	1,586	7.4	1,332	8.2	183	6.5	71	2.9
30-39	5,060	23.6	4,074	25.2	576	20.6	410	16.8
40-49	5,542	25.9	4,162	25.7	721	25.8	659	27.0
50-59	3,487	16.3	2,527	15.6	465	16.6	495	20.3
60-69	2,873	13.4	2,045	12.6	400	14.3	428	17.6
70-79	1,876	8.8	1,326	8.2	284	10.2	266	10.9
80+	1,007	4.7	730	4.5	169	6.0	108	4.4

Table 14.3: Cancer of the Cervix Uteri: Number of Cases, 5-Year Survival Rates (%) and Median Survival Time (Months) by Race and Age (20+), 12 SEER Areas, 1988-2001

Race and Age Group	Cases	Median Survival Time (Months)	5-Year Survival Rate (%)		
			Observed	Expected	Relative
All Races, 20+	21,431	> 120	67.6	94.5	71.5
White, 20+	16,196	> 120	69.0	94.9	72.8
Black, 20+	2,798	99.8	56.8	91.6	61.9
All Races, 20-49	12,188	> 120	78.5	99.1	79.2
White, 20-49	9,568	> 120	80.5	99.3	81.1
Black, 20-49	1,480	> 120	65.5	98.2	66.7
All Races, 50-69	6,360	116.0	61.2	94.9	64.5
White, 50-69	4,572	113.7	61.2	95.1	64.3
Black, 50-69	865	69.8	52.7	91.7	57.4
All Races, 70+	2,883	29.8	36.5	74.3	49.0
White, 70+	2,056	27.8	34.5	73.9	46.8
Black, 70+	453	27.6	36.3	70.0	51.2

Table 14.4: Cancer of the Cervix: Number and Distribution of Cases and 1-, 2-, 3-, 5-, 8-, & 10-Year Relative Survival Rates (%) by SEER Geographic Area, Ages 20+, 12 SEER Areas, 1988-2001

SEER Geographic Area	Cases	Percent	Relative Survival Rate (%)					
			1-Year	2-Year	3-Year	5-Year	8-Year	10-Year
Total	21,431	100.0	89.2	80.6	76.1	71.5	68.7	67.2
Atlanta and Rural Georgia	1,707	8.0	89.8	82.2	77.2	73.5	72.4	70.8
Atlanta (Metropolitan) - 1988+	1,598	7.5	90.4	83.0	78.2	74.3	73.0	71.7
Rural Georgia - 1988+	109	0.5	81.1	69.9	63.1	61.3	61.3	58.3
California								
Los Angeles - 1992+	5,091	23.8	89.4	79.6	74.1	68.6	66.1	62.0
Greater Bay Area	3,613	16.9	89.9	80.9	77.0	71.6	68.3	66.8
San Francisco-Oakland SMSA - 1988+	2,294	10.7	88.9	80.1	76.4	71.6	67.9	65.8
San Jose-Monterey - 1988+	1,319	6.2	91.6	82.2	78.0	71.5	68.8	68.4
Connecticut - 1988+	1,926	9.0	87.1	79.0	75.3	71.3	68.1	67.7
Detroit (Metropolitan) - 1988+	2,688	12.5	86.1	76.7	71.7	66.6	62.5	59.8
Hawaii - 1988+	762	3.6	89.5	82.7	78.6	72.4	70.4	69.9
Iowa - 1988+	1,732	8.1	91.1	83.2	79.2	74.8	71.2	70.1
New Mexico - 1988+	1,083	5.1	89.7	81.9	76.9	73.0	70.5	69.0
Seattle (Puget Sound) - 1988+	1,967	9.2	90.7	83.3	79.4	76.6	74.7	73.9
Utah - 1988+	862	4.0	89.0	83.5	79.3	76.8	73.7	73.1

Table 14.5: Cancer of the Cervix Uteri: Number and Distribution of Cases and 5-Year Relative Survival by Histology, Ages 20+, 12 SEER Areas, 1988-2001

Histology	ICD-O Code	Cases	Percent	5-Year Relative Survival Rate(%)
Total	8000-9989	21,431	100.0	71.5
Squamous	8050-8130	15,579	72.7	71.5
Keratinizing	8071	1,959	9.1	65.8
Non-keratinizing	8072	2,399	11.2	68.2
Microinvasive	8076	2,156	10.1	98.3
All Other Squamous	8050-8070,8073-8075,8077-8130	9,065	42.3	66.9
Adenocarcinoma	8140-8147,8160-8162,8180-8221,8250-8506,8520-8550,8570-8573,8940-8941	3,656	17.1	75.0
Adenosquamous	8560	1,034	4.8	64.5
Other Specified Carcinomas	8030-8045,8150-8155,8170-8171,8230-8248,8510-8512,8561-8562,8580-8671	149	0.7	32.9
Small Cell Carcinomas	8041	140	0.7	34.7
All Other Specified Carcinomas	8030-8040,8042-8045,8150-8155,8170-8171,8230-8248,8510-8512,8561-8562,8580-8671	9	0.0	~
Carcinoma, NOS*	8010-8022	875	4.1	73.5
Other Specified Types	8720-8790,8935,8950-8982,9000-9030,9060-9110,9350-9364,9380-9512,9530-9539	56	0.3	49.0
Unspecified	8000-8004	82	0.4	70.3

~ Statistic not displayed due to less than 25 cases.

* NOS: Not Otherwise Specified

was slightly younger than that for black women or women of other races.

For all women, survival declines with age. In women ages 20-49, the 5-year relative survival rate is 79% compared to 65% in women 50-69 and 49.0% in women aged 70 and older. Survival is also lower for black women compared to white women in all age groups presented with the exception of ages over 70 (Table 14.3).

Geographic Location

There is some evidence of geographic variation in survival. Five-year relative survival rates in the 12 SEER areas represented in this study ranged from 77% in Utah and Seattle to 61% in Rural Georgia (Table 14.4).

Histology

Distribution by histology is presented in Table 14.5. Tumors classified as squamous comprise 72.7% of all cancers of the cervix uteri. Among squamous histologies 12.6% were keratinizing, 15.4% non-keratinizing, and 13.8% microinvasive. Tumors classified as adenocarcinoma comprised 17.1% of the total with adenosquamous making up slightly less than 5%. Survival rates were highest for microinvasive squamous cell carcinoma, 98%, but survival rates were similar for keratinizing and non-keratinizing squamous cell carcinoma, 66 and 68%, respectively (Table 14.5).

SQUAMOUS

Stage

Table 14.6 and Figure 14.1 show the contrast in survival rates across stage at diagnosis over time since diagnosis for squamous cell carcinoma. In stages II-IV, the steepest declines in survival are observed within 2-3 years of diagnosis. Survival continues to decline throughout the 10 years observed in these stages.

Age and Stage

Of the 15,579 cases of squamous, enough information to establish stage at diagnosis was available for 14,819 (95%). Across all age groups, 54.5% were diagnosed in Stage I. The percent diagnosed in stage I declines with age, from 64.9% in ages 20-49, 44.2% in ages 50-69, and 34.5% in ages 70+. At the same time the percent diagnosed in stage IV increases from 5.9% in ages 20-49 to 14.4% in ages 70+ (Table 14.7).

A survival differential across age exists for all stages except stage II, particularly for women aged 70+ compared to women ages 20-69. (Table 14.6, Figure 14.2).

Table 14.6: Squamous Carcinoma of the Cervix Uteri: Number and Distribution of Cases and 1-, 2-, 3-, 5-, 8-, & 10-Year Relative Survival Rates (%) by AJCC Stage (SEER modified 3rd edition), Ages 20+, 12 SEER Areas, 1988-2001

AJCC Stage	Cases	Percent	Relative Survival Rate (%)					
			1-Year	2-Year	3-Year	5-Year	8-Year	10-Year
Total	15,579	100.0	89.9	81.0	76.2	71.5	68.5	66.7
Stage I	8,492	54.5	98.6	95.8	93.8	91.3	88.7	86.9
IA	3,776	24.2	99.7	99.1	98.6	98.1	96.8	95.5
IB	3,293	21.1	98.5	94.6	92.0	88.2	85.3	83.1
I NOS*	1,423	9.1	95.8	89.8	85.4	80.3	75.9	73.2
Stage II	2,439	15.7	92.2	79.3	70.5	60.7	54.8	52.9
IIA	726	4.7	91.8	81.8	75.1	67.2	62.6	60.9
IIB	1,713	11.0	92.4	78.3	68.5	57.9	51.4	49.6
Stage III	2,526	16.2	80.5	62.6	53.9	46.8	43.4	41.2
IIIA	290	1.9	73.7	53.1	43.3	38.6	33.9	29.6
IIIB	2,236	14.4	81.4	63.8	55.2	47.7	44.4	42.4
Stage IV	1,362	8.7	51.6	30.2	22.0	15.8	13.5	12.0
IVA	296	1.9	56.0	32.8	23.5	19.9	17.5	13.6
IVB	1,064	6.8	50.4	29.6	21.7	14.6	12.2	11.7
IV NOS*	<5	0.0	~	~	~	~	~	~
Unknown/Unstaged	760	4.9	84.6	70.9	64.5	56.5	52.2	45.9

~ Statistic not displayed due to less than 25 cases.

* NOS: Not Otherwise Specified

Table 14.7: Squamous Carcinoma of the Cervix Uteri: Number, Distribution of Cases, and 5-Year Relative Survival Rates by AJCC Stage (SEER modified 3rd edition) and Age (20+), 12 SEER Areas, 1988-2001

AJCC Stage	Age (Years)											
	Total			20-49			50-69			70+		
	Cases	Percent	5-Year Relative Survival Rate(%)	Cases	Percent	5-Year Relative Survival Rate(%)	Cases	Percent	5-Year Relative Survival Rate(%)	Cases	Percent	5-Year Relative Survival Rate(%)
Total	15,579	100.0	71.5	8,730	100.0	78.3	4,792	100.0	64.9	2,057	100.0	53.4
Stage I	8,492	54.5	91.3	5,666	64.9	93.0	2,117	44.2	88.3	709	34.5	85.0
IA	3,776	24.2	98.1	2,810	32.2	98.3	749	15.6	96.9	217	10.5	98.4
IB	3,293	21.1	88.2	2,112	24.2	89.4	904	18.9	86.4	277	13.5	83.8
I NOS*	1,423	9.1	80.3	744	8.5	83.6	464	9.7	78.6	215	10.5	70.0
Stage II	2,439	15.7	60.7	1,002	11.5	61.2	980	20.5	63.4	457	22.2	52.6
IIA	726	4.7	67.2	252	2.9	70.7	293	6.1	68.4	181	8.8	58.9
IIB	1,713	11.0	57.9	750	8.6	57.9	687	14.3	61.1	276	13.4	48.5
Stage III	2,526	16.2	46.8	1,221	14.0	50.9	893	18.6	46.0	412	20.0	32.5
IIIA	290	1.9	38.6	77	0.9	44.1	113	2.4	44.4	100	4.9	25.6
IIIB	2,236	14.4	47.7	1,144	13.1	51.4	780	16.3	46.2	312	15.2	34.7
Stage IV	1,362	8.7	15.8	515	5.9	20.9	550	11.5	12.8	297	14.4	10.2
IVA	296	1.9	19.9	96	1.1	28.6	117	2.4	16.2	83	4.0	13.6
IVB	1,064	6.8	14.6	419	4.8	19.1	433	9.0	11.7	212	10.3	8.8
IV NOS*	<5	0.0	~	0	0.0	~	0	0.0	~	<5	0.1	~
Unknown/Unstaged	760	4.9	56.5	326	3.7	66.3	252	5.3	50.5	182	8.8	43.4

* NOS: Not Otherwise Specified

Figure 14.1: Squamous Cell Carcinoma of the Cervix Uteri: Relative Survival Rate (%) by AJCC Stage, Ages 20+, 12 SEER Areas, 1988-2001

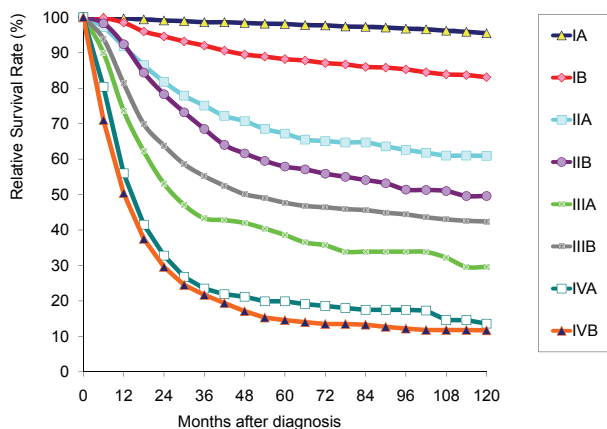
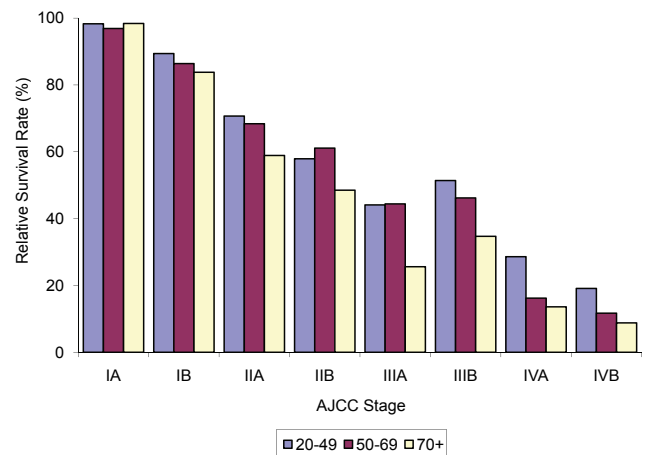


Figure 14.2: Squamous Cell Carcinoma of the Cervix Uteri: 5-Year Relative Survival Rate (%) by AJCC Stage and Age (20+), 12 SEER Areas, 1988-2001



Subtype and Stage

Microinvasive cases show a positive survival advantage compared to the other subtypes in stage I. Little difference exists between the other three subtypes in stages I-IV (Table 14.8).

Stage and Grade

Table 14.9 shows survival rates by AJCC Stage and histologic grade. With the exception of cases diagnosed in stages I and II, no consistent relationship is observed between stage and grade (Table 14.9 & Figure 14.3).

Tumor Size (Stage I and II)

In stages IB-IIIB, survival is higher for those tumors less than 3 cm in size when compared to those 3 cm or greater (Table 14.10, Figure 14.4). A very small difference by tumor size was seen for stage IA.

Figure 14.3: Squamous Cell Carcinoma of the Cervix Uteri: 5-Year Relative Survival Rate (%) by AJCC Stage and Grade, Ages 20+, 12 SEER Areas, 1988-2001

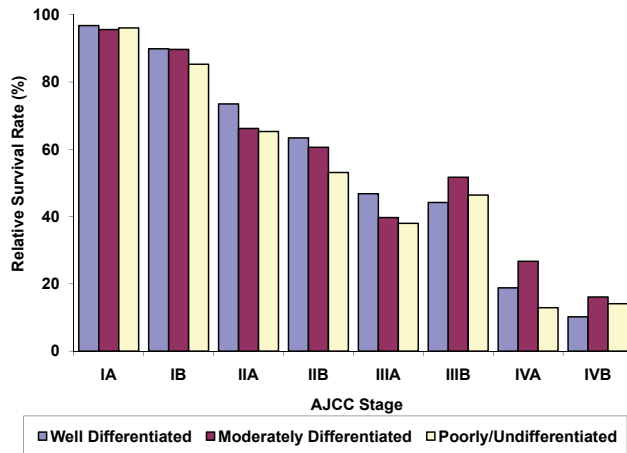


Figure 14.4: Stage I & II Squamous Cell Carcinoma of the Cervix Uteri: 5-Year Relative Survival Rate (%) by AJCC Stage and Tumor Size, Ages 20+, 12 SEER Areas, 1988-2001

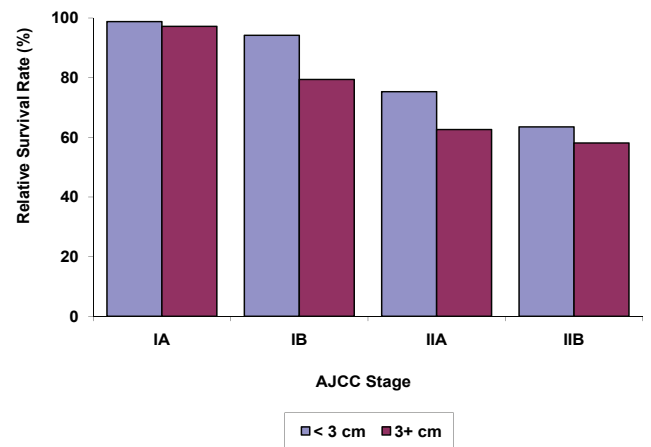


Table 14.8: Squamous Carcinoma of the Cervix Uteri: Number of Cases and 5-Year Relative Survival Rates (%) by Histology and AJCC Stage (SEER modified 3rd edition), Ages 20+, SEER 1988-2001

Histology	AJCC Stage											
	Total		I		II		III		IV		Unknown/Unstaged	
	Cases	5-Year Relative Survival Rate(%)	Cases	5-Year Relative Survival Rate(%)	Cases	5-Year Relative Survival Rate(%)	Cases	5-Year Relative Survival Rate(%)	Cases	5-Year Relative Survival Rate(%)	Cases	5-Year Relative Survival Rate(%)
Total Squamous	15,579	71.5	8,492	91.3	2,439	60.7	2,526	46.8	1,362	15.8	760	56.5
Keratinizing	1,959	65.8	890	88.5	366	61.5	416	46.3	203	18.1	84	46.1
Non-keratinizing	2,399	68.2	1,165	88.5	422	63.8	493	47.4	222	19.4	97	51.8
Microinvasive	2,156	98.3	2,100	98.8	15	~	13	~	7	~	21	~
All Other Squamous	9,065	66.9	4,337	88.8	1,636	59.6	1,604	46.5	930	14.3	558	57.2

~ Statistic not displayed due to less than 25 cases.

Table 14.9: Squamous Carcinoma of the Cervix Uteri: Number of Cases and 5-Year Relative Survival Rates (%) by AJCC Stage (SEER modified 3rd edition) and Grade, Ages 20+, 12 SEER Areas, 1988-2001

AJCC Stage	Grade									
	Total		Well Differentiated		Moderately Differentiated		Poorly/ Undifferentiated		Unknown	
	Cases	5-Year Relative Survival Rate(%)	Cases	5-Year Relative Survival Rate(%)	Cases	5-Year Relative Survival Rate(%)	Cases	5-Year Relative Survival Rate(%)	Cases	5-Year Relative Survival Rate(%)
Total	15,579	71.5	720	76.9	3,930	68.6	4,542	59.7	6,387	80.7
Stage I	8,492	91.3	437	93.2	1,892	88.3	1,852	84.5	4,311	95.1
IA	3,776	98.1	238	96.8	442	95.6	249	96.1	2,847	98.7
IB	3,293	88.2	136	89.9	1,075	89.7	1,205	85.3	877	90.0
I NOS*	1,423	80.3	63	86.1	375	76.3	398	75.1	587	85.3
Stage II	2,439	60.7	113	66.2	717	62.2	890	56.7	719	63.1
IIA	726	67.2	31	73.5	213	66.2	264	65.3	218	69.2
IIB	1,713	57.9	82	63.4	504	60.6	626	53.1	501	60.3
Stage III	2,526	46.8	96	44.6	823	50.3	1,002	45.7	605	44.1
IIIA	290	38.6	12	~	103	39.7	96	38.0	79	36.4
IIIB	2,236	47.7	84	44.2	720	51.7	906	46.4	526	45.1
Stage IV	1,362	15.8	40	11.9	337	18.9	609	13.9	376	16.2
IVA	296	19.9	11	~	85	26.7	124	12.9	76	23.0
IVB	1,064	14.6	29	10.2	250	16.1	485	14.1	300	14.3
IV NOS*	<5	~	0	~	2	~	0	~	0	~
Unknown/Unstaged	760	56.5	34	61.1	161	53.2	189	41.6	376	64.9

~ Statistic not displayed due to less than 25 cases.

* NOS: Not Otherwise Specified

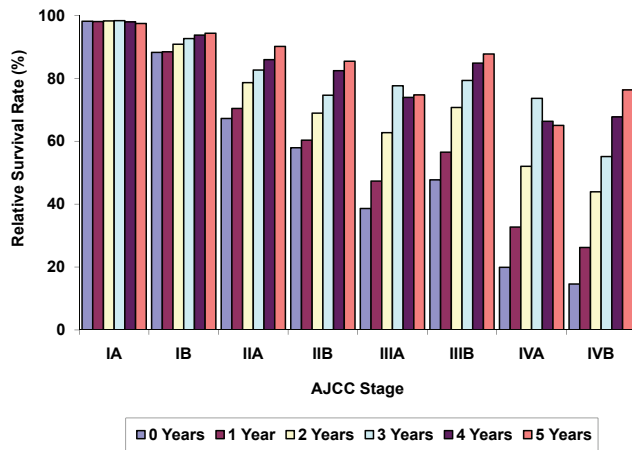
Table 14.10: Squamous Carcinoma of the Cervix Uteri (Stage I and II): Number of Cases and 5-Year Relative Survival Rates (%) by AJCC Stage (SEER modified 3rd edition) and Tumor Size, Ages 20+, 12 SEER Areas, 1988-2001

AJCC Stage	Tumor Size									
	Total		No/Microscopic Mass		< 3 cm		3+ cm		Unknown	
	Cases	5-Year Relative Survival Rate(%)	Cases	5-Year Relative Survival Rate(%)	Cases	5-Year Relative Survival Rate(%)	Cases	5-Year Relative Survival Rate(%)	Cases	5-Year Relative Survival Rate(%)
Total I & II	10,931	84.6	923	98.3	1,754	93.2	2,114	69.6	6,140	85.4
Stage I	8,492	91.3	914	98.5	1,608	95.4	1,067	79.2	4,903	91.3
IA	3,776	98.1	847	99.1	545	98.8	54	97.2	2,330	97.5
IB	3,293	88.2	38	84.3	953	94.2	825	79.4	1,477	89.5
I NOS*	1,423	80.3	29	94.6	110	87.3	188	73.3	1,096	80.2
Stage II	2,439	60.7	9	~	146	69.9	1,047	59.3	1,237	60.6
IIA	726	67.2	5	~	77	75.3	268	62.6	376	68.7
IIB	1,713	57.9	<5	~	69	63.5	779	58.1	861	57.0

~ Statistic not displayed due to less than 25 cases.

* NOS: Not Otherwise Specified

Figure 14.5: Squamous Cell Carcinoma of the Cervix Uteri: 5-Year Relative Survival Rate (%), Conditioned on Years Since Diagnosis, by AJCC Stage, Ages 20+, 12 SEER Areas, 1988-2001



Conditional Survival

Five-year relative survival rates, conditioned on years since diagnosis, are presented in Table 14.11 and Figure 14.5. For stages IB-IV, the probability of surviving through the next 5 years generally increases as time since diagnosis increases. This is most marked for the 5-year relative survival rates starting from one to three years after diagnosis for the stage IVA & IVB cases. For stage IVA, five years

survival rate from time of diagnosis is 20%. For those individuals who survive 1 year post diagnosis, the 5-year survival rate increases to 33%. This increases to 72% for those individuals who survived 3 years. For stage IVB, five year survival rate from time of diagnosis is 15%. For those individuals who survive 1 year post diagnosis, 5-year survival rate increases to 26%. This increases to 67% for those individuals who survived 4 years.

ADENOCARCINOMA

Stage

Of the 3,656 cases of adenocarcinoma, enough information to establish stage at diagnosis was available for 3,446 (94%). 65.1% of the cases were diagnosed in Stage I, with the remaining cases distributed almost evenly among stages II-IV (Table 14.12).

A five year survival difference between stage IA and IB is observed, with 5 year relative survival rate at 99% for stage IA and 90% for IB. Five-year survival decreases to 54% in stage II cases (Table 14.12). The stage distribution is slightly better for adenocarcinoma compared to squamous. For example, 65.1% of adenocarcinomas are staged as stage I in comparison to only 54.5% of squamous. Survival for adenocarcinoma, however, exhibits few differences by stage

Table 14.11: Squamous Carcinoma of the Cervix Uteri: 5-Year Relative Survival Rates (%) , Conditioned on Years Since Diagnosis by AJCC Stage (SEER modified 3rd edition), Ages 20+, 12 SEER Areas, 1988-2001

AJCC Stage	5-Year Relative Survival Rate (%)					
	Years Since Diagnosis					
	0	1	2	3	4	5
Total	71.5	77.7	85.1	88.9	91.3	92.2
Stage I	91.3	91.7	93.5	94.5	95.0	95.1
IA	98.1	98.0	98.2	98.3	97.9	97.4
IB	88.2	88.4	90.8	92.6	93.7	94.2
I NOS	80.3	82.4	86.6	88.3	89.9	90.8
Stage II	60.7	63.3	71.9	77.2	83.5	86.6
IIA	67.2	70.4	78.4	82.5	85.4	89.5
IIB	57.9	60.3	68.8	74.6	82.4	85.1
Stage III	46.8	55.6	70.0	79.1	83.8	86.5
IIIA	38.6	47.3	62.0	76.7	73.9	73.5
IIIB	47.7	56.5	70.7	79.3	84.8	87.6
Stage IV	15.8	27.7	45.9	59.5	66.8	72.4
IVA	19.9	32.6	51.8	72.1	66.3	65.0
IVB	14.6	26.1	43.8	54.9	67.2	76.1
IV NOS	~	~	~	~	~	~
Unknown/Unstaged	56.5	63.0	73.4	79.0	82.1	79.5

* NOS: Not Otherwise Specified
 ~ Statistic not displayed due to less than 25 cases.

when compared to squamous of the cervix uteri (Tables 14.6 and 14.12).

Figure 14.6 show the contrast in the relative survival rates between stage at diagnosis and years since diagnosis. In stages II-IV, the steepest declines in survival are observed within 2-3 years of diagnosis. Survival continues to decline throughout the 10 years observed in these stages.

Stage and Grade

The 3,656 cases of adenocarcinoma are shown by histologic grade (Table 14.13 & Figure 14.7). Within stage, 5-year relative survival declines as grade increases from well differentiated to poorly/anaplastic. Within stage I, the 5-year survival rates vary from 97% for well differ-

entiated tumors to 77% for poorly/undifferentiated tumors. Squamous cell carcinoma showed less variation by grade within stage.

Conditional Survival

Five year relative survival rates, conditioned on years since diagnosis, are presented in Table 14.14 and Figure 14.8. For stages IB-IV, the probability of surviving through the next 5 years increases as time since diagnosis increases. This is most marked for the stage IV cases. The 5-year survival rate from time of diagnosis was 14%. For those individuals who survive 1 year post diagnosis, survival over the next 5-years increased to 26%. This increased to 57% for the group of individuals who survived 4 years after diagnosis.

Figure 14.6: Adenocarcinoma of the Cervix Uteri: Relative Survival Rate (%) by AJCC Stage, Ages 20+, 12 SEER Areas, 1988-2001

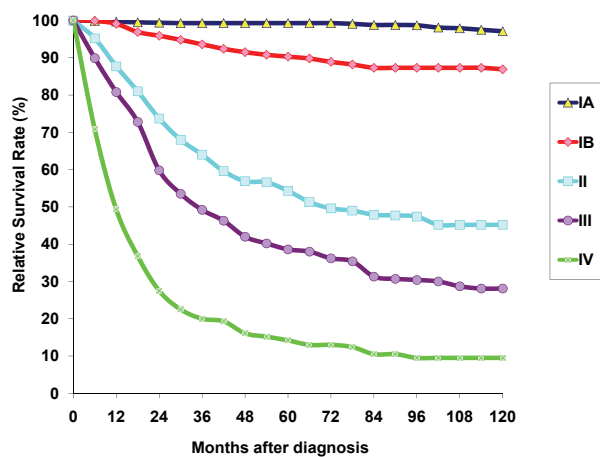


Figure 14.7: Adenocarcinoma of the Cervix Uteri: 5-Year Relative Survival Rate (%) by AJCC Stage and Grade, Ages 20+, 12 SEER Areas, 1988-2001

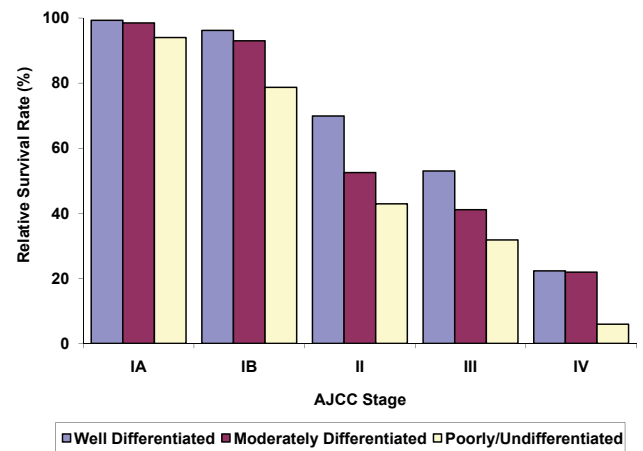


Table 14.12: Adenocarcinoma of the Cervix Uteri: Number and Distribution of Cases and 1-, 2-, 3-, 5-, 8-, & 10-Year Relative Survival Rates (%) AJCC Stage (SEER modified 3rd edition), Ages 20+, 12 SEER Areas, 1988-2001

AJCC Stage	Cases	Percent	Relative Survival Rate (%)					
			1-Year	2-Year	3-Year	5-Year	8-Year	10-Year
Total	3,656	100.0	90.3	82.8	78.6	75.0	72.3	71.2
Stage I	2,379	65.1	98.6	95.8	94.0	91.9	90.3	89.0
IA	630	17.2	99.7	99.4	99.3	99.3	98.7	97.1
IB	1,150	31.5	99.1	95.9	93.6	90.3	87.3	86.9
I NOS*	599	16.4	96.6	91.9	89.2	86.9	86.7	84.8
Stage II	356	9.7	87.7	73.7	64.0	54.3	47.4	45.2
Stage III	353	9.7	80.8	59.8	49.2	38.6	30.4	28.1
Stage IV	358	9.8	49.3	27.5	20.0	14.2	9.5	9.5
Unknown/Unstaged	210	5.7	85.7	78.8	71.1	67.0	63.0	57.9

* NOS: Not Otherwise Specified

Table 14.13: Adenocarcinoma of the Cervix Uteri: 5-Year Relative Survival Rates (%) by AJCC Stage (SEER modified 3rd edition) and Grade, Ages 20+, 12 SEER Areas, 1988-2001

AJCC Stage	Grade									
	Total		Well Differentiated		Moderately Differentiated		Poorly/ Undifferentiated		Unknown	
	Cases	5-Year Relative Survival Rate(%)	Cases	5-Year Relative Survival Rate(%)	Cases	5-Year Relative Survival Rate(%)	Cases	5-Year Relative Survival Rate(%)	Cases	5-Year Relative Survival Rate(%)
Total	3,656	75.0	877	89.7	1,100	75.9	779	49.2	900	80.6
Stage I	2,379	91.9	711	96.9	707	92.8	345	77.0	616	93.1
IA	630	99.3	198	99.3	143	98.5	48	94.0	241	99.5
IB	1,150	90.3	351	96.2	396	93.0	217	78.7	186	86.6
I NOS*	599	86.9	162	94.1	168	86.1	80	62.2	189	90.5
Stage II	356	54.3	58	69.9	140	52.5	86	42.9	72	55.6
Stage III	353	38.6	51	53.0	111	41.1	141	31.8	50	34.3
Stage IV	358	14.2	32	22.3	92	21.9	174	5.9	60	20.9
Unknown/Unstaged	210	67.0	25	70.7	50	58.7	33	53.7	102	73.1

* NOS: Not Otherwise Specified

Table 14.14: Adenocarcinoma of the Cervix Uteri: 5-Year Relative Survival Rates (%), Conditioned on Years Since Diagnosis by AJCC Stage (SEER modified 3rd edition), Ages 20+, 12 SEER Areas, 1988-2001

AJCC Stage	5-Year Relative Survival Rate(%)					
	Years Since Diagnosis					
	0	1	2	3	4	5
Total	75.0	80.6	86.1	90.2	92.5	92.9
Stage I	91.9	92.2	94.0	95.7	96.6	96.4
IA	99.3	99.5	99.3	99.1	97.8	97.2
IB	90.3	89.8	91.0	93.2	95.5	96.0
I NOS*	86.9	89.0	93.3	96.1	96.9	96.3
Stage II	54.3	55.5	63.4	72.0	77.4	81.0
Stage III	38.6	43.9	50.3	58.9	64.0	68.6
Stage IV	14.2	25.8	36.5	45.8	57.2	65.5
Unknown/Unstaged	67.0	73.0	79.2	84.9	85.4	82.5

* NOS: Not Otherwise Specified

Table 14.15: Adenosquamous Cancer of the Cervix Uteri: Number and Distribution of Cases and 1-, 2-, 3-, 5-, 8-, & 10-Year Relative Survival Rates (%) by AJCC Stage (SEER modified 3rd edition), Ages 20+, 12 SEER Areas, 1988-2001

AJCC Stage	Cases	Percent	Relative Survival Rate (%)					
			1-Year	2-Year	3-Year	5-Year	8-Year	10-Year
Total	1,034	100.0	85.3	76.1	70.6	64.5	61.0	60.1
Stage I	550	53.2	97.2	92.2	88.9	84.1	80.3	80.1
IA	110	10.6	99.2	98.7	98.7	97.0	92.4	92.4
IB	310	30.0	97.5	92.1	85.6	81.1	77.4	75.5
I NOS*	130	12.6	94.7	86.8	86.8	79.7	76.9	76.9
Stage II	127	12.3	89.2	74.0	66.3	60.2	51.0	43.5
Stage III	168	16.2	77.0	65.0	55.3	43.3	40.8	40.8
Stage IV	140	13.5	47.9	31.6	20.4	15.6	15.6	15.6
Unknown/Unstaged	49	4.7	75.7	61.7	59.7	54.3	46.0	41.3

* NOS: Not Otherwise Specified

ADENOSQUAMOUS

Stage

Of the 1,034 cases of adenosquamous, enough information to establish stage at diagnosis was available for 985 (95%). 53% of the cases were diagnosed in Stage I, with the remaining cases distributed almost evenly stages II-IV (Table 14.15).

A five year survival difference between stage IA and IB was observed, with 5 year relative survival rate at 97% for stage IA and 81% for IB. Survival decreased to 60% in stage II cases (Table 14.15). Survival for adenosquamous may be slightly lower in stages IA and IB compared to squamous and adenocarcinoma, however, survival in stages II-IV is similar for all three histologies.

Figure 14.9 and Table 14.15 show the contrast in survival across stage at diagnosis over time since diagnosis. In stages IB-IV, the steepest declines in survival are observed within 2-4 years of diagnosis. Survival continues to decline throughout the 10 years observed only for stage II. The survival rates for the other stages appear to plateau.

Conditional Survival

Five year relative survival rates, conditioned on years since diagnosis, are presented in Table 14.16 and Figure 14.10. For stages IB-IV, the probability of surviving through the next 5 years increases as time since diagnosis increases. This is most marked for the stage IV cases. Five years survival from time of diagnosis was 16%. For those individuals who survived 1 year post diagnosis, 5-year survival rate increased to 32%. This increased to 100% for those individuals who survived 5 years.

DISCUSSION

Five-year relative survival rates declined with age at diagnosis, with women 70 years or older having less than 50% survival. Black women tended to fare worse than white women in all age groups, except those 70 years or older. By histology, squamous carcinomas represented approximately three-quarters of all cases. The proportion of squamous cases diagnosed at stage IV increased with age. There is an age differential in survival rates across all stages of squamous tumors, except stage II, with older women faring slightly worse than younger women. There is little difference in survival between adenocarcinoma histologies and squamous histologies by stage. For all stages combined, women with adenocarcinoma had a slightly better survival rate since there was a higher proportion of stage I among the women with adenocarcinoma compared to squamous. Women with

Figure 14.8: Adenocarcinoma of the Cervix Uteri: 5-Year Relative Survival Rate (%), Conditioned on Years Since Diagnosis by AJCC Stage, Ages 20+, 12 SEER Areas, 1988-2001

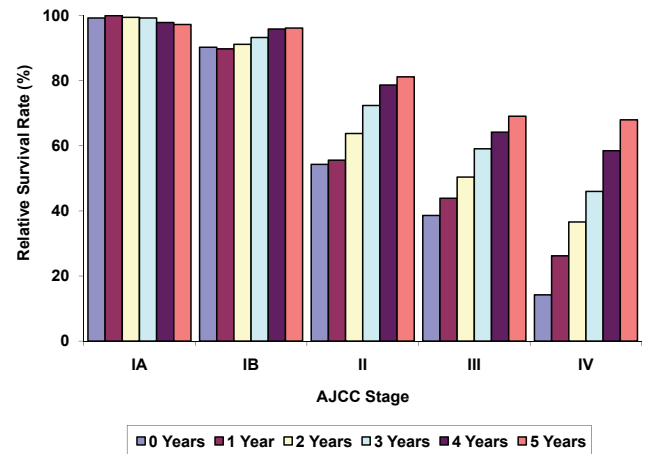


Figure 14.9: Adenosquamous Carcinoma of the Cervix Uteri: Relative Survival Rate (%) by AJCC Stage, Ages 20+, 12 SEER Areas, 1988-2001

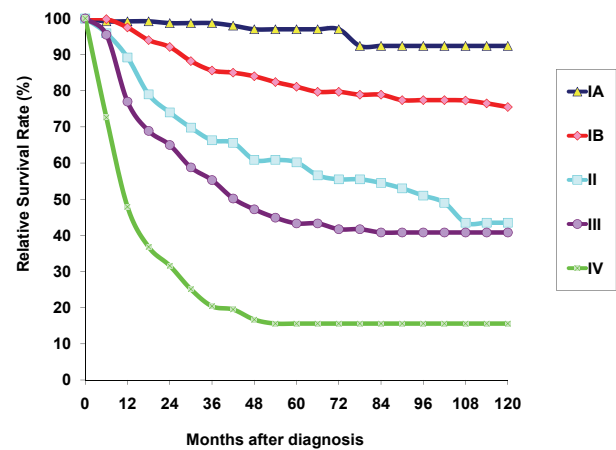


Figure 14.10: Adenosquamous Carcinoma of the Cervix Uteri: 5-Year Relative Survival Rate (%), Conditioned on Years Since Diagnosis by AJCC Stage, Ages 20+, 12 SEER Areas, 1988-2001

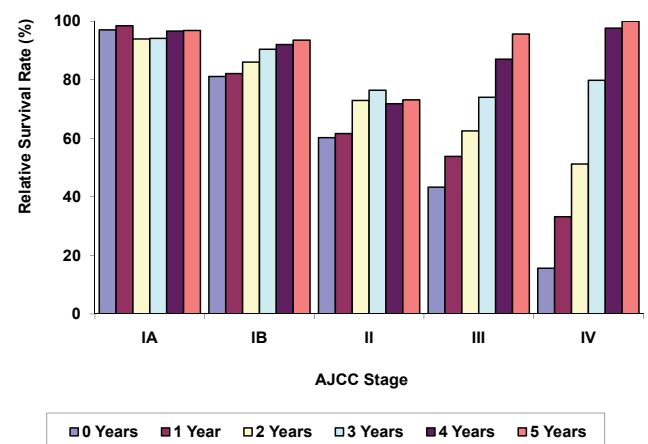


Table 14.16: Adenosquamous Cancer of the Cervix Uteri: 5-Year Relative Survival Rates (%), Conditioned on Years Since Diagnosis by AJCC Stage (SEER modified 3rd edition), Ages 20+, 12 SEER Areas, 1988-2001

AJCC Stage	5-Year Relative Survival Rate (%)					
	Years Since Diagnosis					
	0	1	2	3	4	5
Total	64.5	73.3	81.1	85.7	89.9	92.5
Stage I	84.1	85.4	88.5	90.1	93.1	95.4
IA	97.0	97.5	93.7	93.4	95.4	95.0
IB	81.1	81.8	85.6	90.1	92.0	93.3
I NOS*	79.7	82.3	90.1	87.2	93.1	95.8
Stage II	60.2	61.5	72.9	76.2	71.8	71.7
Stage III	43.3	53.8	62.3	73.3	85.8	93.6
Stage IV	15.6	32.4	49.2	76.1	93.6	100.0
Unknown/Unstaged	54.3	64.2	79.6	76.6	72.7	76.0

* NOS: Not Otherwise Specified

adenosquamous histologies have a slightly lower survival in stage I tumors compared to adenocarcinoma and squamous histologies, but all three histologies were similar for stages II-IV. Advanced tumor grade for adenocarcinomas, was associated with poorer survival within stage.

REFERENCES

1. American Cancer Society. Cancer Facts and Figures 2006. Atlanta: American Cancer Society, 2006.
2. Ries LAG, Harkins D, Krapcho M, Mariotto A, Miller BA, Feuer EJ, Clegg L, Eisner MP, Horner MJ, Howlader N, Hayat M, Hankey BF, Edwards BK (eds). SEER Cancer Statistics Review, 1975-2003, National Cancer Institute. Bethesda, MD, http://seer.cancer.gov/csr/1975_2003/, based on November 2005 SEER data submission, posted to the SEER web site, 2006.
3. Beahrs, OH, Henson DE, Hutter RVP, Myers MH (eds). AJCC Cancer Staging Manual, Third edition. American Joint Committee on Cancer. Philadelphia: Lippincott, 1988.