

# Uterine Cancer In Ohio, 2000-2004

## This Report on Uterine Cancer Contains

- Incidence and Mortality Rates in Ohio and the US
- Incidence Rates by Race
- Incidence Rates by County of Residence
- Age-specific Incidence Rates by Race
- Uterine Anatomy and Histology Information
- Stage at Diagnosis by Race
- Survival Probability
- Trends in Stage at Diagnosis
- Trends in Incidence and Mortality by Race
- Risk Factors
- Signs and Symptoms
- Clinical Trials Information
- Sources of Data and Additional Information

## Uterine Cancer Incidence and Mortality

Uterine cancer (also known as corpus uterus/uteri cancer) made up approximately 3 percent of incident (newly diagnosed) cancers reported to the Ohio Cancer Incidence Surveillance System (OCISS) from 2000 to 2004 (Table 1). The average annual age-adjusted uterine cancer incidence rate in Ohio from 2000 to 2004 was 26.0 cases per 100,000 females, or an average of 1,713 cases per year (N). The average annual age-adjusted U.S. (SEER<sup>1</sup>) incidence rate for 2000-2004 (23.2 cases per 100,000) was 10.8 percent lower than the rate for Ohio. Reporting of uterine cancer in Ohio was estimated to be 100 percent complete in 2000-2004. The 2000-2004 Ohio age-adjusted mortality rate for uterine cancer of 4.5 deaths per 100,000 females was 9.8 percent greater than the mortality rate of 4.1 per 100,000 females in the United States (NCHS<sup>2</sup>).

**Table 1: Leading Sites/Types and Uterine Cancer: Average Annual Number (N), Percent and Age-adjusted Rates of Invasive Cancer Cases and Cancer Deaths in Ohio with Comparison to the US (SEER and NCHS), 2000-2004<sup>1,2</sup>**

Incidence	N	%	Ohio	U.S.	Mortality	N	%	Ohio	U.S.
			Rate	Rate				Rate	Rate
<b>All Sites/Types</b>	<b>55,880</b>		<b>464.8</b>	<b>470.1</b>	<b>All Sites/Types</b>	<b>24,894</b>		<b>205.4</b>	<b>192.7</b>
Lung and Bronchus	9,028	16.2%	74.9	64.5	Lung and Bronchus	7,326	29.4%	60.6	54.7
Breast (Female)*	8,118	14.5%	123.7	127.8	Colon and Rectum	2,577	10.4%	21.2	19.4
Prostate*	7,778	13.9%	149.6	168.0	Breast (Female)*	1,919	7.7%	27.9	25.5
Colon and Rectum	6,559	11.7%	54.2	51.6	Prostate*	1,272	5.1%	28.3	27.9
Bladder	2,638	4.7%	21.8	21.1	Pancreas	1,266	5.1%	10.4	10.6
Non-Hodgkin's Lymphoma	2,276	4.1%	19.0	19.3	Non-Hodgkin's Lymphoma	998	4.0%	8.2	7.6
⋮					⋮				
<b>Uterine*</b>	<b>1,713</b>	<b>3.1%</b>	<b>26.0</b>	<b>23.2</b>	<b>Uterine*</b>	<b>315</b>	<b>1.3%</b>	<b>4.5</b>	<b>4.1</b>

Source: Ohio Cancer Incidence Surveillance System, Chronic Disease and Behavioral Epidemiology Section and the Vital Statistics Program, Ohio Department of Health, 2007.

[1] SEER: Surveillance, Epidemiology and End Results Program, National Cancer Institute, 2007.

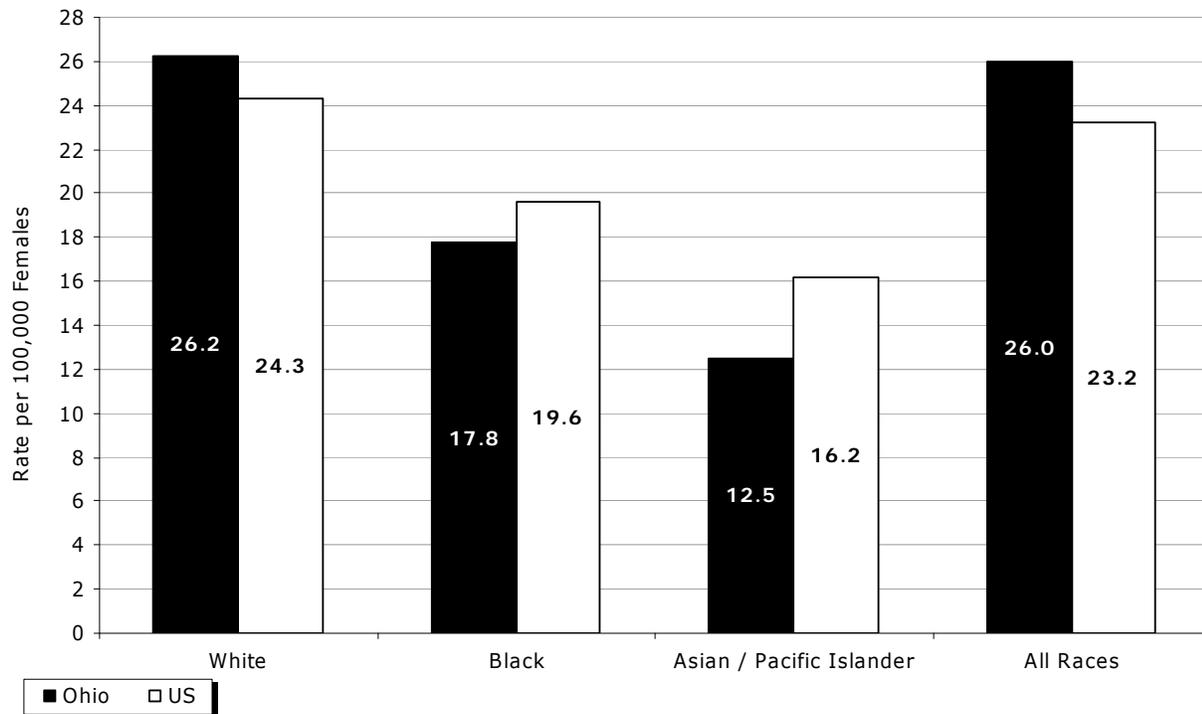
[2] NCHS: National Center for Health Statistics, 2005.

\*The rates of female breast, prostate and uterine cancer are gender specific (i.e., the population denominator is females or males only).

N = Average number of cases per year rounded to the nearest integer.

## Uterine Cancer Incidence in Ohio Compared to the United States

Figure 1: Uterine Cancer: Average Annual Age-adjusted Incidence Rates per 100,000 Females, by Race in Ohio with Comparison to the US (SEER), 2000-2004



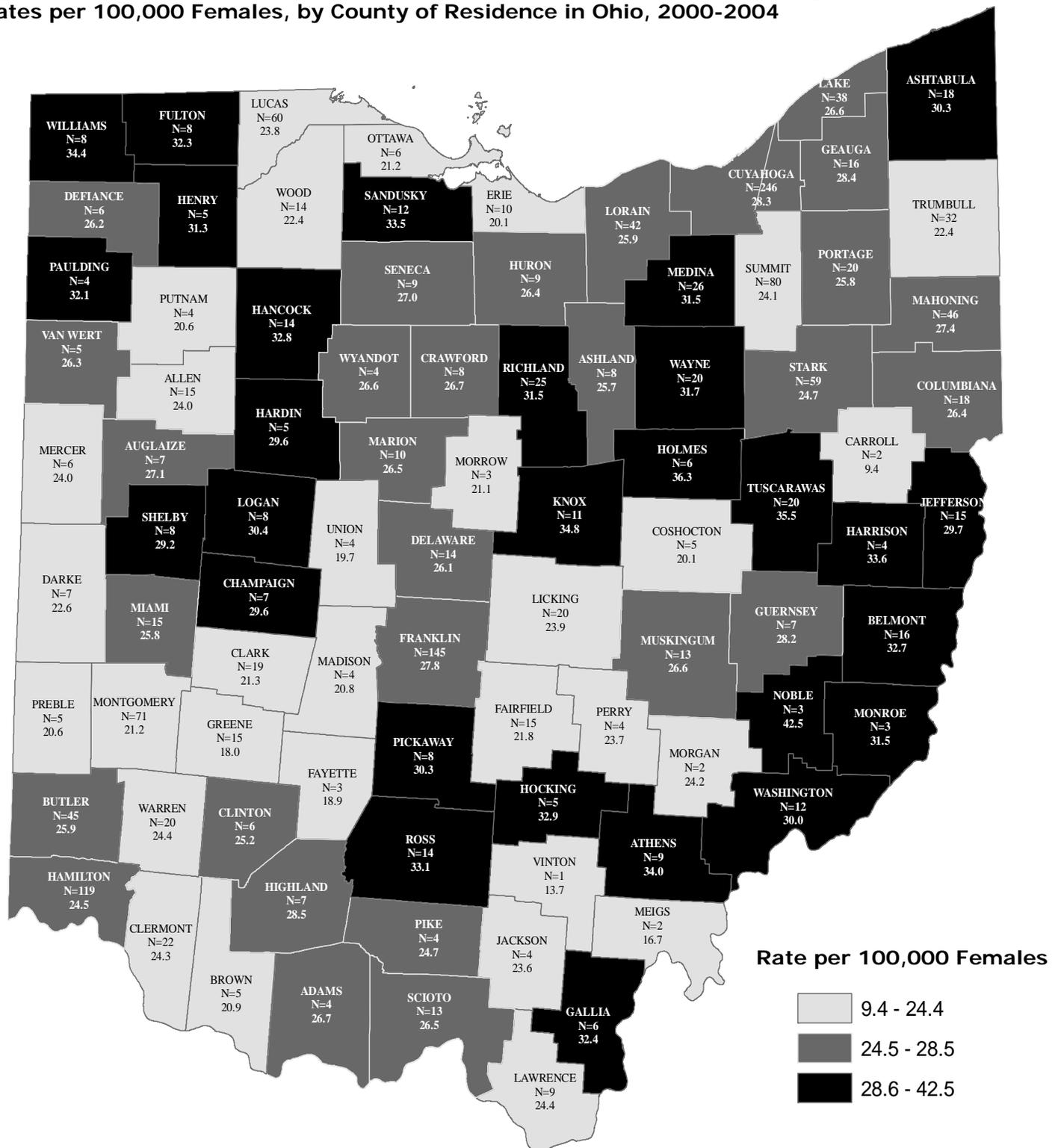
Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2007, and the Surveillance, Epidemiology and End Results Program, National Cancer Institute, 2007.

Figure 1 shows the 2000-2004 uterine cancer age-adjusted incidence rates for whites were higher than those of blacks and Asian/Pacific Islanders in both Ohio and the United States. Higher uterine cancer incidence rates among whites may result from racial differences in risk factors (see page 9), such as use of hormone replacement therapy. The uterine cancer incidence rate among whites was 7.8 percent greater in Ohio compared to the United States, while the rates among blacks and Asian/Pacific Islanders were lower in Ohio compared to U.S. rates (9.2 percent and 22.8 percent, respectively). Because approximately 86 percent of Ohio females are white, the Ohio rate for all races combined is similar to the rate among whites.

## Uterine Cancer Cases and Rates by County of Residence

Figure 2 presents 2000-2004 average annual age-adjusted uterine cancer incidence rates by county of residence. County-specific uterine cancer incidence rates in Ohio ranged from 9.4 to 42.5 per 100,000 females. Some counties with the highest incidence rates were located on the eastern border (Appalachian region) and in the northwestern portion of the state, although the geographic pattern is relatively sporadic. The following counties had the highest incidence rates for this time period (33.1 or more cases per 100,000 females): Athens (N = 9), Harrison (N = 4), Holmes (N = 6), Knox (N = 11), Noble (N = 3), Ross (N = 14), Sandusky (N = 12), Tuscarawas (N = 20) and Williams (N = 8).

Figure 2: Uterine Cancer: Average Annual Number of Cases (N) and Age-adjusted Incidence Rates per 100,000 Females, by County of Residence in Ohio, 2000-2004



- Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2007.
- N = Average number of cases per year rounded to the nearest integer.  

$$N = \frac{\text{Total cases in 2000-2004}}{5 \text{ years}}$$
- Each category represents approximately 33% of the 88 Ohio counties.

## Uterine Cancer Cases and Rates by Age at Diagnosis

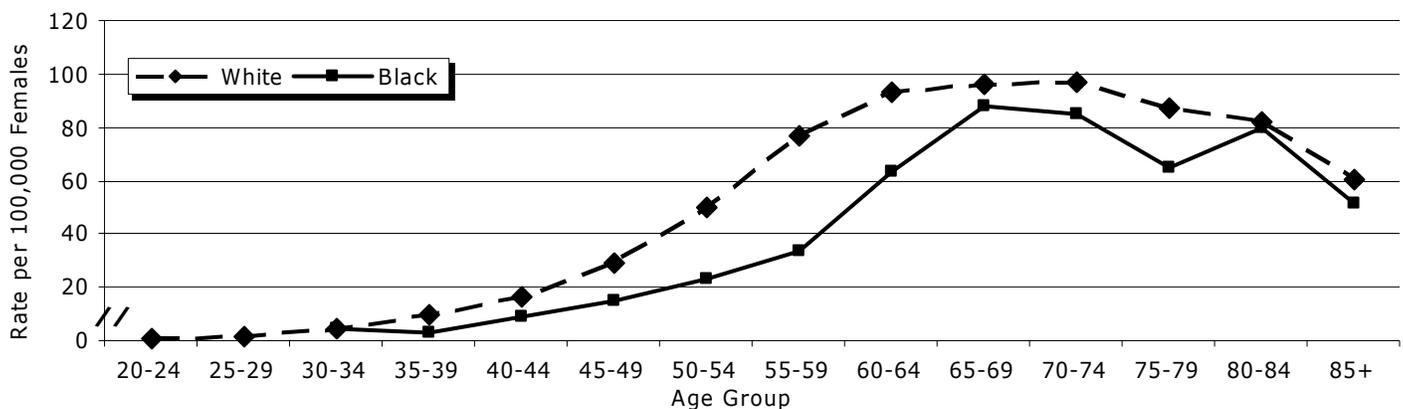
Table 2: Uterine Cancer: Average Annual Number of Cases (N), Incidence Rates per 100,000 Females and Cumulative Percentages (Cum%), by Age Group (Ages 20+) and Race in Ohio, 2000-2004

Age Group	White			Black			All Races		
	N	Rate	Cum%	N	Rate	Cum%	N	Rate	Cum%
20-24	2	0.5	0.1%	<1	*	0.7%	2	0.6	0.2%
25-29	4	1.4	0.4%	<1	*	1.4%	5	1.4	0.5%
30-34	14	4.3	1.3%	2	4.3	3.4%	18	4.6	1.5%
35-39	35	9.8	3.6%	1	2.7	4.6%	37	8.9	3.7%
40-44	65	16.3	7.9%	5	9.3	9.2%	73	15.8	8.0%
45-49	111	28.7	15.1%	8	15.1	15.9%	122	27.6	15.1%
50-54	174	50.1	26.5%	10	23.4	24.5%	194	49.1	26.5%
55-59	214	76.8	40.4%	10	33.7	33.5%	232	74.2	40.0%
60-64	210	92.8	54.1%	16	63.4	47.4%	237	93.4	53.9%
65-69	186	96.0	66.1%	20	88.3	64.7%	212	97.5	66.3%
70-74	177	96.6	77.7%	16	84.6	79.0%	200	97.6	77.9%
75-79	154	87.5	87.7%	10	65.2	88.2%	171	88.3	87.9%
80-84	111	82.2	95.0%	8	79.7	95.6%	123	83.6	95.0%
85+	77	60.3	100.0%	5	51.7	100.0%	85	62.0	100.0%

Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2007.

\* Rates may be unstable and are not presented when the case count for 2000-2004 is less than five (i.e.,  $N < 1$ ).

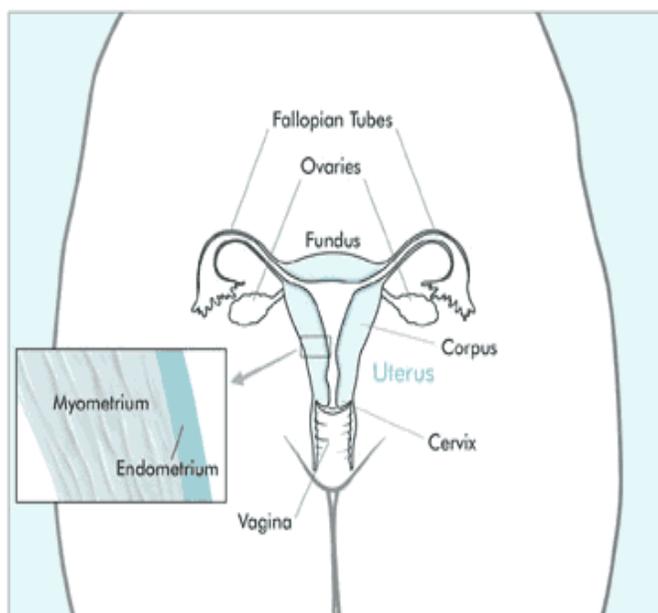
Figure 3: Uterine Cancer: Age-specific Incidence Rates (Ages 20+) per 100,000 Females, by Race in Ohio, 2000-2004



Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2007.

Table 2 and Figure 3 show age-specific incidence rates for uterine cancer by race. The median age at diagnosis of uterine cancer occurred in the 60-64 years age group for whites and in the 65-69 years age group for blacks. Among whites, uterine cancer incidence rates increased with advancing age group from ages 20-24 years to 70-74 years and then declined. Among blacks, uterine cancer incidence rates increased with advancing age group from ages 35-39 years to 65-69 years and then were unstable for those age groups 70-74 years and older. The cumulative percentages in Table 2 for all races indicate 60 percent of uterine cancers were diagnosed among persons ages 60 years and older.

## Anatomy of the Uterus and Uterine Cancer Histology



Source: National Cancer Institute

Histology refers to the cancer tissue or cell type. Table 3 shows the distribution of invasive uterine cancer by histologic type for both Ohio and the United States. In Ohio, more than 80 percent of uterine cancers were adenomas or adenocarcinomas, which are cancers originating in glandular (or secretory) tissue. The vast majority of these were adenocarcinomas. The proportion of adenomas and adenocarcinomas in the United States (78.8 percent) was slightly lower than that in Ohio (81.7 percent). Histologic types for which the proportion was greater in the United States compared to Ohio were: complex mixed and stromal; cystic mucinous and serous; complex epithelial; and myomatous tumors. The proportions of epithelial tumors; tumors, not otherwise specified (NOS); and squamous cell tumors were greater in Ohio compared to the United States.

### Histologic types were defined as follows:

Tumor, NOS: 8000  
 Epithelial: 8010-8046  
 Squamous cell: 8050-8075  
 Adenomas and adenocarcinomas: 8140-8383  
 Cystic mucinous and serous: 8440-8490  
 Complex epithelial: 8560-8570  
 Soft tissue and sarcomas: 8800-8801  
 Myomatous: 8890-8910  
 Complex mixed and stromal: 8930-8981

The uterus is part of the female reproductive system. It is the hollow, pear-shaped organ where a baby develops. As shown in the figure to the left, the uterus is located in the pelvis between the bladder and rectum. The broad, middle section of the uterus is the body or corpus, and the dome-shaped top section of the uterus is the fundus.

The wall of the uterus has two layers of tissues. The inner layer is the endometrium and the outer layer is the myometrium. Approximately 95 percent of uterine cancers occur in the endometrium. In women of child-bearing age, the lining grows and thickens each month to prepare for pregnancy. During menstruation, the excess lining flows out of the body through the vagina.

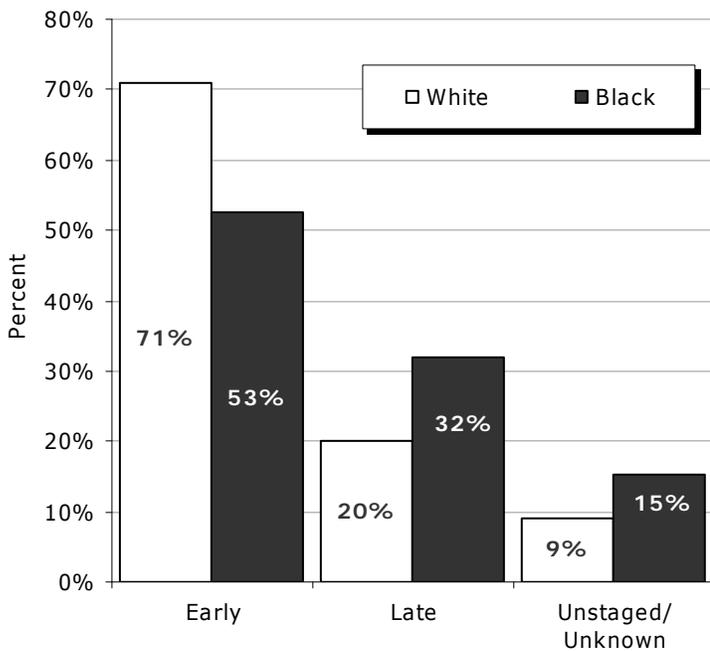
**Table 3: Uterine Cancer: Average Annual Number of Cases (N) and Percent Distribution by Histologic Type in Ohio and the US, 2000-2004**

Histologic Type (Histology)	Ohio		US
	N	%	%
Adenoma/Adenocarcinoma	1399	81.7%	78.8%
Complex Mixed and Stromal	93	5.4%	6.5%
Cystic Mucinous and Serous	85	5.0%	6.0%
Epithelial	41	2.4%	1.6%
Complex Epithelial	28	1.7%	2.7%
Myomatous	26	1.5%	2.4%
Tumor, Not Otherwise Specified	19	1.1%	0.9%
Squamous Cell	13	0.8%	0.5%
Soft Tissue and Sarcoma	6	0.3%	0.3%

Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2007, and the Surveillance, Epidemiology and End Results Program, National Cancer Institute, 2007.

## Uterine Cancer Cases and Survival by Stage at Diagnosis

**Figure 4: Uterine Cancer: Proportion of Cases (%) by Stage at Diagnosis and Race in Ohio, 2000-2004**



N = 1,736 cases per year

Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2007.

The stage at diagnosis of uterine cancer is an important determinant of survival. For *in situ* cancers, the tumor has not invaded or penetrated surrounding tissue. In the localized stage, the tumor is confined to the organ in which it originated. In the regional stage, the tumor has spread to surrounding tissues. In the distant stage, the malignancy has spread, or metastasized, to other organs. The 2000-2004 Ohio data presented in Figure 4 reveal 71 percent of uterine cancers among whites were diagnosed at *in situ* or localized (early) stages, which is greater than the 53 percent of blacks diagnosed early stage. Twenty percent of whites compared to 32 percent of blacks were diagnosed at later (regional and distant) stages. The percentage of uterine cancer cases reported unstaged/unknown stage was greater among blacks (15 percent) compared to whites (9 percent). There is/are no known reason(s) accounting for this racial difference in stage at diagnosis of uterine cancer.

Table 4 shows the U.S. (SEER) five-year survival probability for uterine cancer diagnosed in 1996-2003 was 82.9 percent for all stages combined. Five-year survival probabilities were 95.3 percent for those diagnosed at the localized stage, 67.4 percent at the regional stage and only 23.1 percent for distant-stage tumors. Five-year survival probabilities for all stages combined was higher for whites (84.7 percent) compared to blacks (60.8 percent) and for women less than 50 years of age (89.1 percent) compared to women 50 years of age and older (81.7 percent). At present, there is no screening test for use in detecting uterine cancers at earlier stages.

**Table 4: Uterine Cancer: Five-year Survival Probability (%) by Stage at Diagnosis in the US (SEER), 1996-2003**

Stage	Overall Five-year Survival Probability (%)
All Stages	82.9%
Localized	95.3%
Regional	67.4%
Distant	23.1%

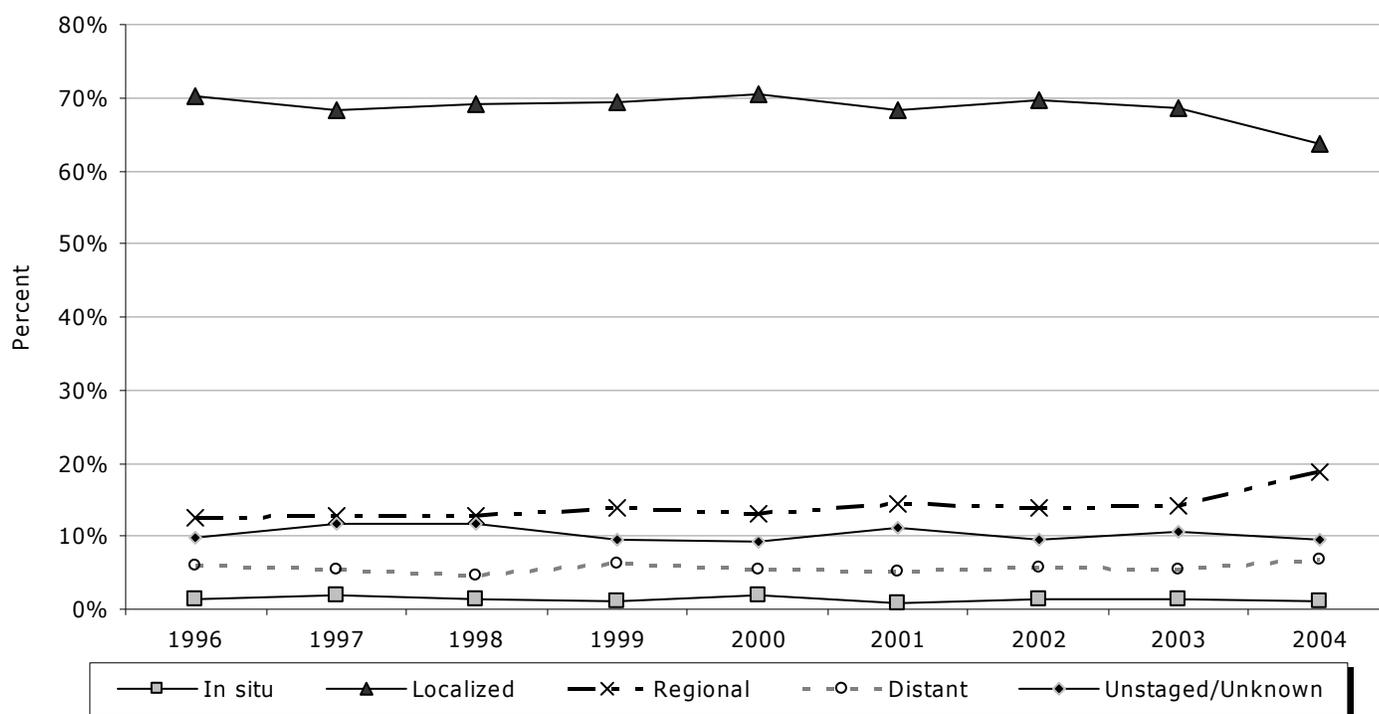
Source: SEER Cancer Statistics Review 1975-2004, National Cancer Institute, 2007.

## Did You Know?

In Ohio and the United States, the age-adjusted incidence rate of uterine cancer is greater among whites compared to blacks; however, the age-adjusted mortality rate is greater among blacks. This mortality disparity among blacks is also apparent for female breast cancer and may be related to race differences in treatment and access to care.

### Uterine Cancer Stage at Diagnosis Trends

Figure 5: Uterine Cancer: Trends in the Proportion of Cases (%) by Stage at Diagnosis in Ohio,

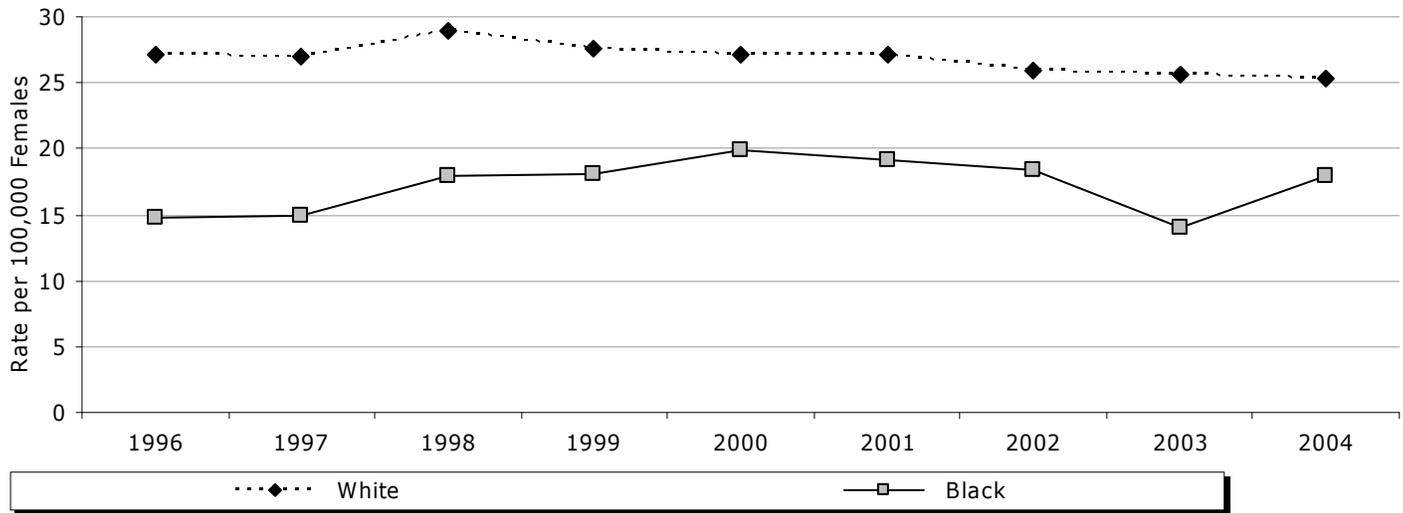


Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2007.

Figure 5 shows the distribution of stage at diagnosis of uterine cancer according to year of diagnosis from 1996 to 2004. The proportion of cases diagnosed at the distant stage increased from 5.9 percent in 1996 to 6.7 percent in 2004, and the proportion diagnosed at the regional stage increased from 12.5 percent in 1996 to 18.8 percent in 2004. In contrast, the proportion diagnosed at the localized stage decreased from 70.3 percent in 1996 to 63.8 percent in 2004. The proportion with an unstaged/unknown stage at diagnosis remained relatively stable throughout the time period.

## Uterine Cancer Incidence and Mortality Trends

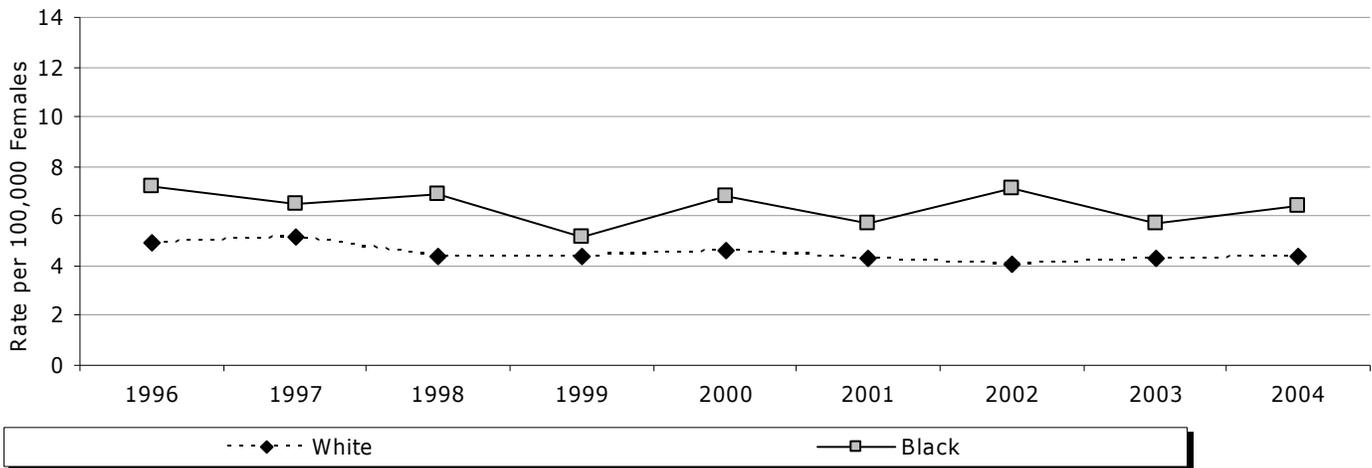
Figure 6: Uterine Cancer: Trends in Average Annual Age-adjusted Incidence Rates per 100,000 Females, by Race in Ohio, 1996-2004



Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2007.

Figure 6 shows incidence rates of uterine cancer in Ohio according to year of diagnosis (1996 to 2004) by race. Incidence rates among whites were greater than those of blacks each year during the time period. From 1996 to 2004, there was a decrease of 6.3 percent in the uterine cancer incidence rate among whites and an increase of 21.6 percent among blacks. There is no known explanation for these changes over time.

Figure 7: Uterine Cancer: Trends in Average Annual Age-adjusted Mortality Rates per 100,000 Females, by Race in Ohio, 1996-2004



Source: Chronic Disease and Behavioral Epidemiology Section and the Vital Statistics Program, Ohio Department of Health, 2007.

Figure 7 shows trends in mortality rates of uterine cancer according to year of death (1996 to 2004) by race. In contrast to incidence, mortality rates among blacks were greater than those of whites. There appears to be a similar decrease in uterine cancer mortality rates for whites and blacks during the time period; from 1996 to 2004, the mortality rate among whites decreased 10.2 percent, while the mortality rate among blacks decreased 11.1 percent.

## Risk Factors for Uterine Cancer

- **Age** - Cancer of the uterus occurs mostly in women over age 50.
- **Race** - White women are more likely than black women to develop uterine cancer.
- **Endometrial Hyperplasia** - Women with an increased number of cells in the uterine lining are at greater uterine cancer risk.
- **Hormone Replacement Therapy (HRT)** - Women who use estrogen without progesterone are at greater uterine cancer risk.
- **Exposure to Estrogen** - Women who have no children, begin menstruation at a young age (before age 12) or enter menopause late in life (after age 52) are exposed to estrogen for a longer period of time and are at greater uterine cancer risk.
- **Obesity** - Obesity and conditions/diseases related to obesity (e.g. diabetes, high blood pressure) increase uterine cancer risk. Obese women have higher levels of estrogen and this may be why they are at greater risk. However, there is inadequate evidence that decreasing weight reduces uterine cancer risk.
- **High Animal-fat Diet** - A diet high in animal fat increases uterine cancer risk, perhaps because a high animal-fat diet can lead to obesity or because fatty foods affect estrogen metabolism.
- **Tamoxifen** - Women who take Tamoxifen to treat or prevent breast cancer are at greater uterine cancer risk.
- **Inherited Colorectal Cancer** - Women who have an inherited form of colorectal cancer called hereditary nonpolyposis colon cancer (HNPCC) or women with relatives with HNPCC are at greater risk of uterine cancer.
- **History of Breast or Ovarian Cancers** - Women who have been diagnosed with breast or ovarian cancer are at greater risk of uterine cancer, perhaps because these cancers share risk factors, especially those affecting estrogen.
- **Prior Pelvic Radiation Therapy** - Women who have received pelvic radiation to treat other cancers are at greater uterine cancer risk.
- **Ovarian Diseases** - Women with polycystic ovarian syndrome (ovaries with many cysts) and women with ovarian tumors called granulosa-theca cell tumors (which make estrogen) are at greater uterine cancer risk, probably because these tumors increase estrogen levels.

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## Uterine Cancer Signs and Symptoms

Uterine cancer usually occurs after, or sometimes around the time of, menopause. The symptoms of uterine cancer include:

- Unusual vaginal bleeding or discharge (most common symptom)
- Difficult or painful urination
- Pelvic pain
- Pain during intercourse

Because these symptoms can be the result of other conditions or diseases, it is important to talk with your doctor if you have any of these symptoms.

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## Clinical Trials Information

Clinical trials test many types of treatments including new drugs, surgical procedures, radiation therapy and combinations of these. The goal of conducting clinical trials is to find better ways to treat cancer. To obtain information concerning clinical trials for uterine cancer, please talk with your doctor or visit one of the following Web sites:

- **National Cancer Institute:**  
<http://www.cancer.gov/clinicaltrials>
- **American Cancer Society:**  
[http://www.cancer.org/docroot/ETO/ETO\\_6.asp?sitearea=ETO](http://www.cancer.org/docroot/ETO/ETO_6.asp?sitearea=ETO)
- **The Ohio State University Comprehensive Cancer Center—Arthur G. James Cancer Hospital and Richard J. Solove Research Institute:**  
<http://www.jamesline.com/trials>
- **The Cleveland Clinic:**  
<http://cms.clevelandclinic.org/cancer/body.cfm?id=68&oTopID=68>
- **Case Western Reserve University Comprehensive Cancer Center:**  
<http://henge.case.edu/sip/SIPControlServlet>
- **University of Cincinnati:**  
<http://uccancercenter.uc.edu/research/clinicaltrials>
- **Toledo Community Hospital Oncology Program:**  
<http://www.tchop.com>
- **Dayton Clinical Oncology Program:**  
<http://www.med.wright.edu/dcop>
- **Columbus Community Clinical Oncology Program:**  
<http://www.columbusccop.org>

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## Sources of Data and Additional Information

- **Ohio Cancer Incidence Surveillance System:**  
[http://www.odh.ohio.gov/ODHPrograms/svio/ci\\_surv/ci\\_surv1.aspx](http://www.odh.ohio.gov/ODHPrograms/svio/ci_surv/ci_surv1.aspx)
- **National Cancer Institute:**  
<http://www.cancer.gov/cancertopics/types/endometrial>
- **American Cancer Society:**  
[http://www.cancer.org/docroot/CRI/CRI\\_2\\_3x.asp?dt=11](http://www.cancer.org/docroot/CRI/CRI_2_3x.asp?dt=11)

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## Technical Notes

- [1] Uterine cancer cases were defined as follows: International Classification of Diseases for Oncology, Third Edition (ICD-O-3), code C540-C549; C559, excluding histology types 9590-9989. Uterine cancer deaths were defined as follows: International Statistical Classification of Diseases and Related Health Problems, Tenth Edition (ICD-10), codes C540-C559.
- [2] The 2000-2004 Ohio rates were calculated using the following populations: vintage 2005 postcensal estimates for July 1, 2000-2004 (U.S. Census Bureau, 2006). Rates were direct age-adjusted to the U.S. 2000 standard population.
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## The Ohio Cancer Incidence Surveillance System (OCISS)

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