

Uterine Cancer in Ohio, 2011-2015

Incidence and Mortality

Cancer that starts in the uterus is called uterine cancer. Uterine cancer made up 3.5 percent of newly diagnosed (incidence) cancer cases in Ohio reported to the Ohio Cancer Incidence Surveillance System (OCISS) from 2011 to 2015. An average of 2,225 cases of uterine cancer were diagnosed annually in Ohio during this time period (Table 1). The average annual age-adjusted uterine cancer incidence rate in Ohio was 29.2 cases per 100,000 females, compared to the national (SEER) incidence rate of 26.0 per 100,000 females. In Ohio in 2011-2015, the uterine cancer incidence rate was highest among whites (29.9 per 100,000 females) and lowest among Asians/Pacific Islanders (12.9 per 100,000 females). In Ohio and the United States, uterine cancer incidence rates were about five times higher for females 65 and older than those less than 65.

An average of 397 deaths from uterine cancer occurred each year in Ohio in 2011-2015 (Table 1). Ohio's average annual age-adjusted uterine cancer mortality rate was 5.0 per 100,000 females, compared to the U.S. mortality rate of 4.6 per 100,000 females. In contrast to incidence, the mortality rate was higher for blacks (7.0 deaths per 100,000 females) than whites (4.8 per 100,000 females) and Asians/Pacific Islanders (2.8 per 100,000 females) in Ohio during this time period. Uterine cancer mortality rates were about 15 times higher for females 65 and older than those less than 65 in both Ohio and the United States.

Key Findings and Populations at High Risk

- An average of 2,225 cases of uterine cancer were diagnosed each year in Ohio in 2011-2015.
- The uterine cancer incidence rate in Ohio was 29.2 per 100,000 females, compared to the national rate of 26.0 per 100,000 females in 2011-2015.
- In both Ohio and the United States, whites had the highest incidence rates of uterine cancer, while blacks had the highest mortality rates.
- Uterine cancer was most frequently diagnosed among Ohio women aged 60 to 64.
- From 1996 to 2015, incidence rates of uterine cancer in Ohio increased for whites and blacks, while mortality rates were relatively stable.
- There was no clear geographic pattern of incidence rates of uterine cancer by county in Ohio.
- White women in Ohio were more likely to be diagnosed with uterine cancer at a local stage, while blacks had a higher proportion of cases diagnosed at a distant stage.
- The proportion of regional and distant stage uterine cancer diagnoses increased in Ohio from 1996 to 2015, while the proportion of unstaged/missing stage diagnoses decreased.

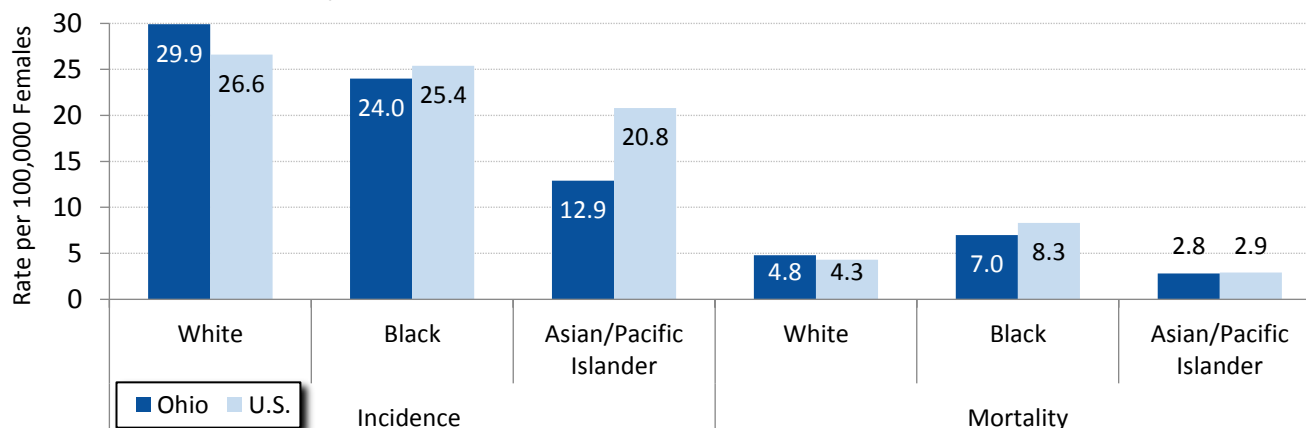
Table 1. Uterine Cancer: Average Annual Number of Invasive Cancer Cases and Deaths and Age-adjusted Incidence and Mortality Rates per 100,000 Females by Race and Age Group, Ohio and the United States, 2011-2015

		Incidence			Mortality		
		Ohio Cases	Ohio Rate	U.S. Rate	Ohio Deaths	Ohio Rate	U.S. Rate
Total		2,225	29.2	26.0	397	5.0	4.6
Race	White	1,992	29.9	26.6	338	4.8	4.3
	Black	195	24.0	25.4	55	7.0	8.3
	Asian/Pacific Islander	15	12.9	20.8	3	2.8	2.9
Age Group	<65	1,274	19.4	16.9	128	1.8	1.7
	65+	950	96.8	88.6	269	26.7	24.8

Sources: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2018; Bureau of Vital Statistics, Ohio Department of Health, 2018; Surveillance, Epidemiology and End Results (SEER) Program, National Cancer Institute, 2018.

Incidence and Mortality by Race

Figure 1. Uterine Cancer: Average Annual Age-adjusted Incidence and Mortality Rates per 100,000 Females by Race, Ohio and the United States, 2011-2015

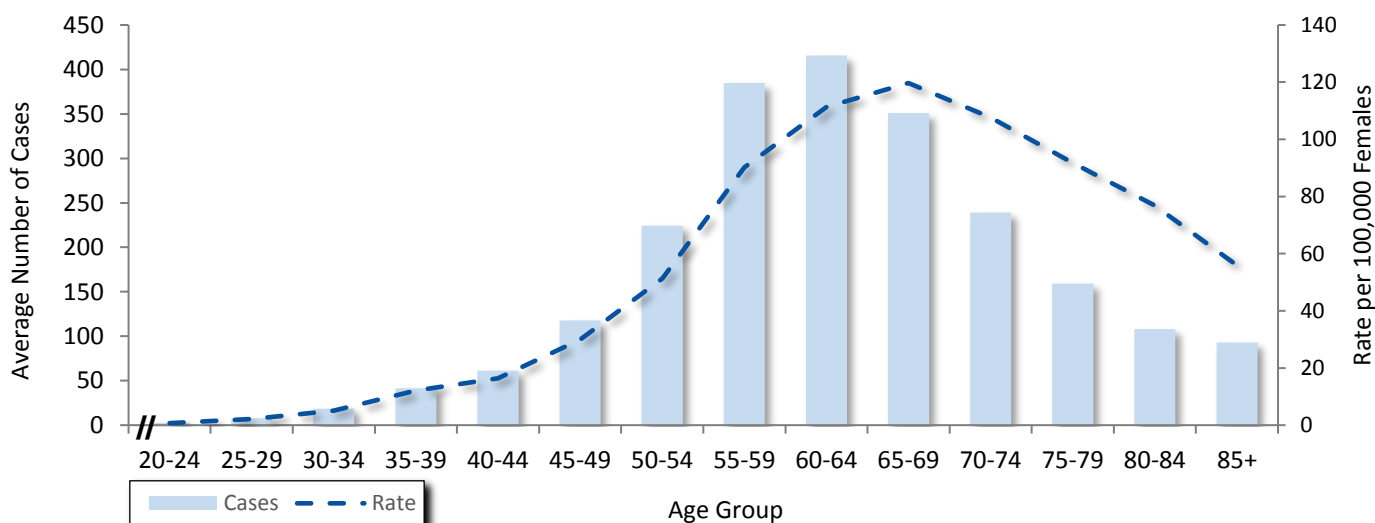


Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2018; Bureau of Vital Statistics, Ohio Department of Health, 2018; Surveillance, Epidemiology and End Results (SEER) Program, National Cancer Institute, 2018.

In both Ohio and the United States, whites had the highest incidence rates of uterine cancer, while blacks had the highest mortality rates (Figure 1). The uterine cancer incidence rate among whites was 12 percent higher in Ohio compared to the United States, while the incidence rates among blacks and Asians/Pacific Islanders were 6 percent and 38 percent lower in Ohio compared to the United States, respectively.

Incidence by Age Group

Figure 2. Uterine Cancer: Average Annual Number of Invasive Cancer Cases and Age-specific Incidence Rates per 100,000 Females by Age Group, Ohio, 2011-2015

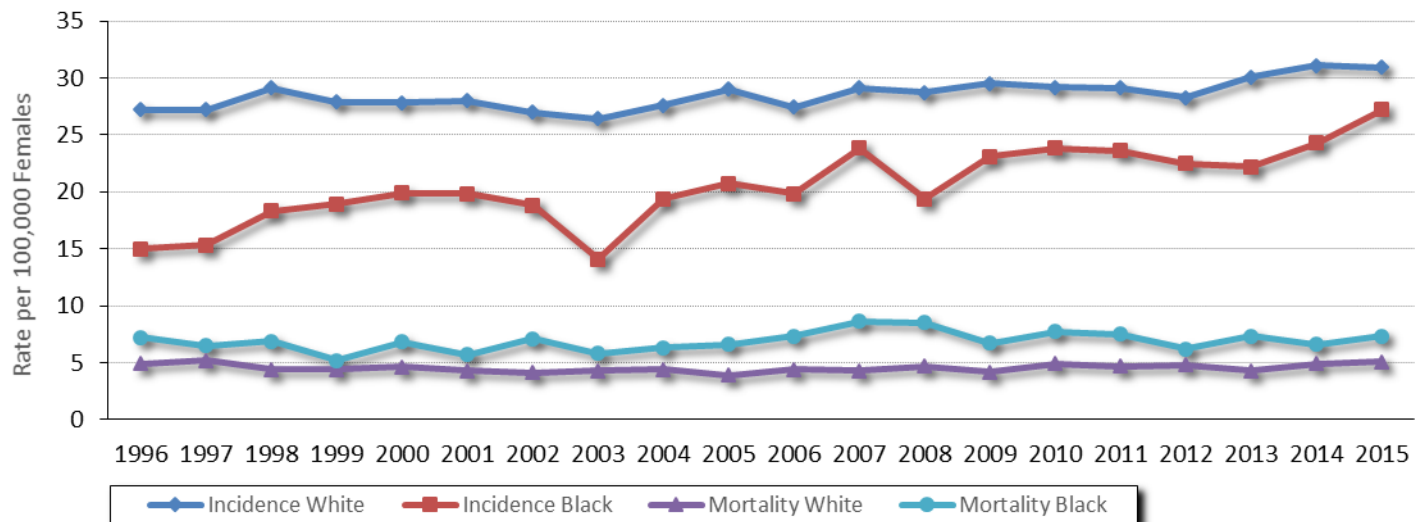


Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2018.

Figure 2 shows that uterine cancer was most frequently diagnosed among women in the 60-64 age group in Ohio during 2011-2015. Uterine cancer age-specific incidence rates increased with advancing age group from ages 20-24 years to 65-69 years, followed by a decline for those age 70 and older.

Trends in Incidence and Mortality

Figure 3. Uterine Cancer: Trends in Age-adjusted Incidence and Mortality Rates per 100,000 Females by Race, Ohio, 1996-2015



Sources: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2018; Bureau of Vital Statistics, Ohio Department of Health, 2018.

Figure 3 shows trends in incidence and mortality rates of uterine cancer in Ohio according to year of diagnosis or death (1996 to 2015) by race. For each year of comparison, the incidence rate for whites was greater than the rate for blacks, while the mortality rate among blacks was greater than the rate for whites. Comparing 1996 to 2015, the uterine cancer incidence rate increased 14 and 81 percent among whites and blacks, respectively, while mortality rates were relatively stable.

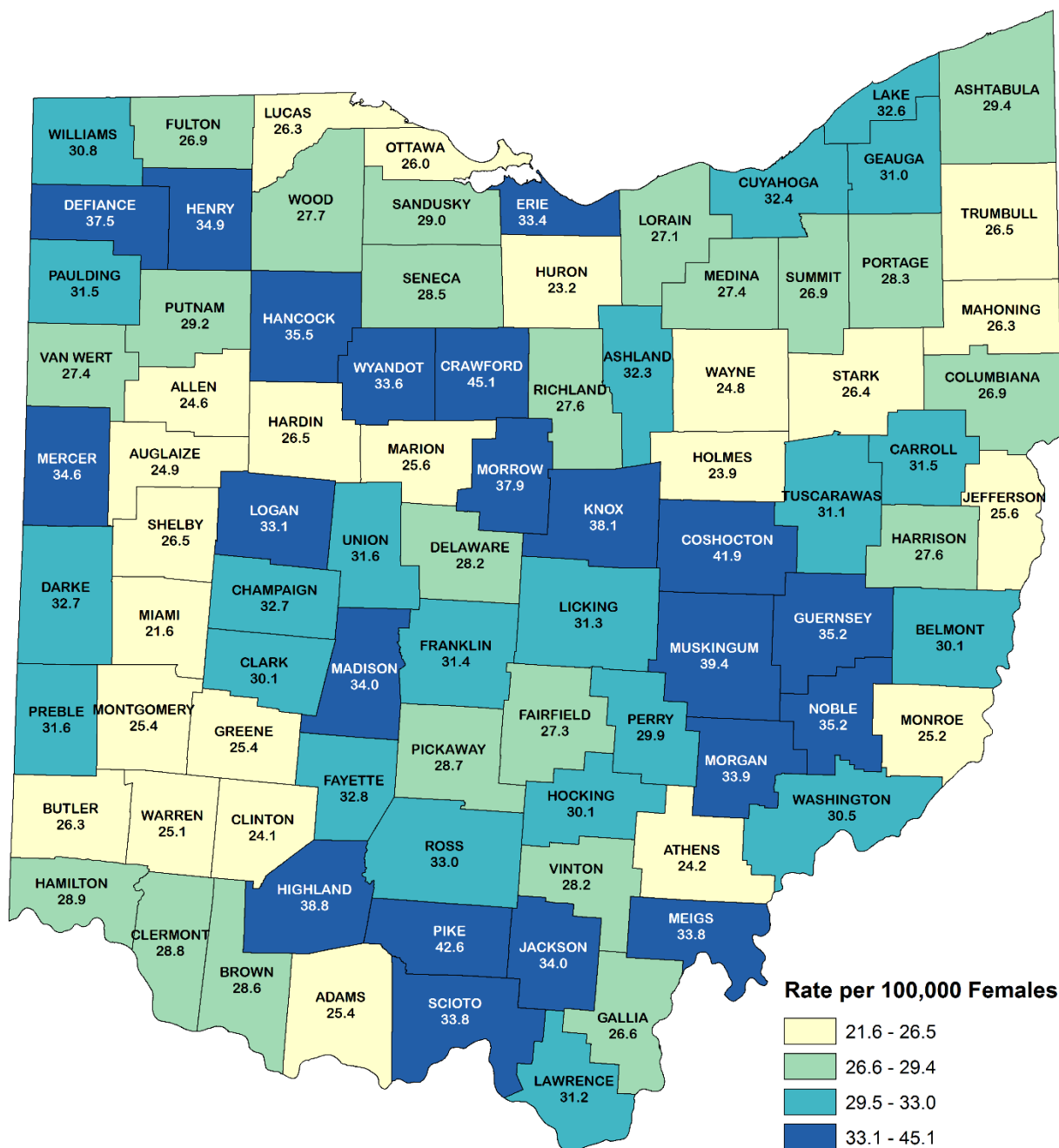
Did You Know?

- Uterine cancer is the most common cancer of the female reproductive system, accounting for more new cancer cases than ovarian, cervical, vaginal and vulvar cancers combined.
- Approximately 2.9 percent of women will be diagnosed with uterine cancer at some point during their lifetime.

Incidence by County

Figure 4 shows 2011-2015 average annual age-adjusted uterine cancer incidence rates by county of residence. County-specific uterine cancer incidence rates in Ohio ranged from 21.6 to 45.1 per 100,000 female residents, compared with Ohio's rate of 29.2 per 100,000 females. There was no clear geographic pattern of incidence rates by county. The following five counties, in decreasing order, had the highest incidence rates for this time period: Crawford, Pike, Coshocton, Muskingum and Highland.

Figure 4. Uterine Cancer: Average Annual Age-adjusted Incidence Rates per 100,000 Females by County of Residence, Ohio, 2011-2015



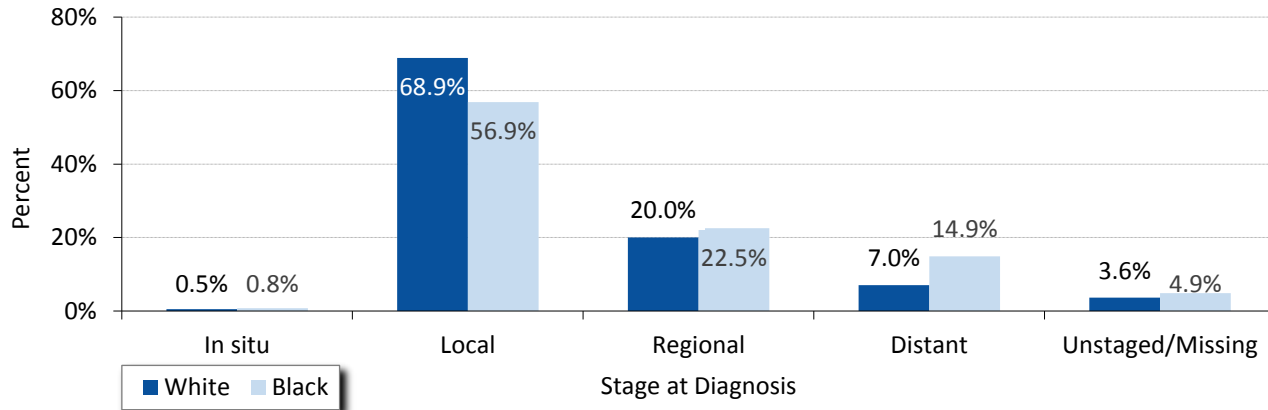
Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2018.

Each category represents approximately 25 percent of the 88 Ohio counties.

Stage at Diagnosis

Cancer stage at diagnosis, which refers to the extent or spread of a cancer in the body, is used to select appropriate treatment and is an important determinant of survival. The stages of cancer, in order of increasing spread, are *in situ*, local, regional and distant. The 2011-2015 Ohio data presented in Figure 5 show that most uterine cancers were diagnosed at a local stage. White women in Ohio were more likely than black women to be diagnosed at this early stage (68.9 percent versus 56.9 percent). Blacks had a higher proportion of cases diagnosed at a distant stage (14.9 percent), where survival for black women is only 9.2 percent.

Figure 5. Uterine Cancer: Proportion of Cases (%) by Stage at Diagnosis and Race, Ohio, 2011-2015

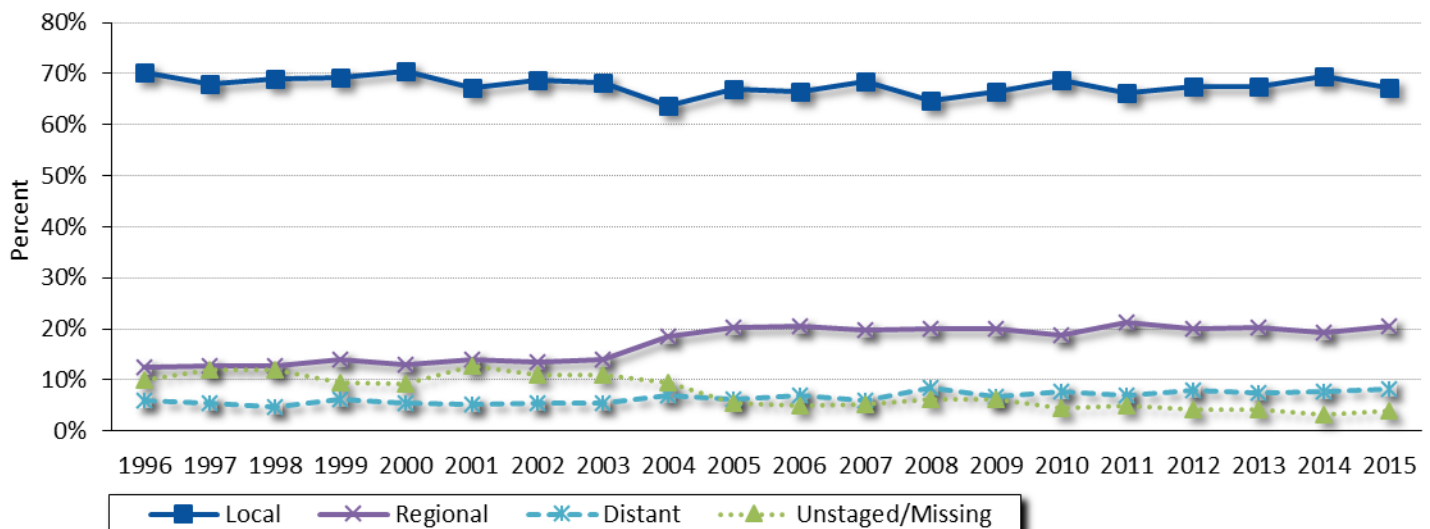


Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2018.

Trends in Stage at Diagnosis

Figure 6 shows the distribution of stage at diagnosis of uterine cancer according to year of diagnosis from 1996 to 2015. The proportion of regional stage diagnoses increased 63 percent in Ohio, from 12.5 percent in 1996 to 20.4 percent in 2015, while the proportion of unstaged/missing stage diagnoses decreased 61 percent in Ohio during this 20-year period. The proportion of local stage tumors was relatively stable while distant stage diagnoses increased 37 percent (from 5.9 percent in 1996 to 8.1 percent in 2015) during this time period.

Figure 6. Uterine Cancer: Trends in the Proportion of Cases (%) by Stage at Diagnosis and Year, Ohio, 1996-2015



Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2018.

Survival

Relative survival probability is the percentage of people who are alive at a designated time period (usually five years) after a diagnosis divided by the percentage expected to be alive in the absence of a diagnosis based on normal life expectancy. Table 2 shows the U.S. (SEER) five-year relative survival probability for uterine cancer in 2008-2014 is 81.1 percent for all stages combined. Five-year relative survival probabilities are 94.9 percent at the local stage, 68.6 percent at the regional stage and 16.3 percent for distant-stage tumors. Survival is substantially lower for black women than for white women at every stage of diagnosis. The overall five-year relative survival probability for women less than 50 years of age is 88.1 percent compared to 79.9 percent for women ages 50 and older.

Table 2: Uterine Cancer: Five-year Relative Survival Probability (%) by Stage at Diagnosis, Race and Age Group in the United States, 2008-2014

	All Races			White			Black		
	All	<50	50+	All	<50	50+	All	<50	50+
All Stages	81.1%	88.1%	79.9%	83.4%	89.3%	82.5%	61.6%	77.6%	59.1%
Local	94.9%	96.4%	94.6%	95.9%	96.9%	95.7%	85.3%	91.4%	84.1%
Regional	68.6%	81.0%	66.9%	71.3%	82.1%	69.9%	48.5%	70.9%	46.0%
Distant	16.3%	28.5%	14.5%	17.4%	30.3%	15.6%	9.2%	20.5%	7.8%
Unstaged/Missing	52.0%	88.8%	44.5%	50.7%	89.3%	43.8%	43.3%	85.1%	36.5%

Source: Surveillance, Epidemiology and End Results (SEER) Program, *SEER Cancer Statistics Review (CSR)*, 1975-2015, National Cancer Institute, 2018.

Types of Uterine Cancer

The two main types of uterine cancer are endometrial carcinomas and uterine sarcomas.

- **Endometrial carcinomas** start in the cells of the inner lining of the uterus (the endometrium). Nearly all cancers of the uterus are this type. Most endometrial carcinomas are adenocarcinomas, where endometrioid, serous and mixed cell adenocarcinomas accounted for 73.0 percent, 6.0 percent and 4.4 percent of all invasive uterine cancer cases in Ohio during 2011-2015 (Table 3).
- **Uterine sarcomas** start in the muscle layer (myometrium) or supporting connective tissue of the uterus and include uterine leiomyosarcomas and endometrial stromal sarcomas. In Ohio, about 2.8 percent of cases were uterine sarcomas in 2011-2015 (Table 3).

Table 3: Uterine Cancer: Average Annual Number and Proportion of Cases (%) by Histology, Ohio, 2011-2015

Histological Type (Histology Code)	Cases	Percent
Endometrial carcinoma		
Endometrioid adenocarcinoma (8262, 8380, 8382, 8383, 8570)	1,623	73.0%
Serous adenocarcinoma (8441, 8460, 8461)	134	6.0%
Mixed cell adenocarcinoma (8323)	98	4.4%
Clear cell adenocarcinoma (8310)	22	1.0%
Mucinous adenocarcinoma (8480, 8482)	16	0.7%
Papillary adenocarcinoma (8260)	2	0.1%
Uterine sarcoma (8800, 8801, 8802, 8805, 8890, 8891, 8896, 8900, 8910, 8930, 8931)	61	2.8%

Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2018.

Note: Not all types of uterine cancer are presented in Table 3; therefore, percentages do not add up to 100 percent.

Risk Factors

Anything that increases your risk of getting a disease is called a risk factor. Having a risk factor does not mean that you will get cancer; not having risk factors doesn't mean that you will not get cancer. The following is a list of risk factors for uterine cancer:

Obesity: Women who are obese have a greater chance of developing uterine cancer, most likely due to an increased amount of circulating estrogen, which is a strong risk factor.

Reproductive and Menstrual History: Women are at increased risk of uterine cancer if at least one of the following apply:

- ✓ Have never had children
- ✓ Had their first menstrual period before age 12
- ✓ Went through menopause after age 55

Estrogen Therapy: The risk of uterine cancer is higher among women who used estrogen alone (without progesterone) for menopausal hormone therapy for many years.

Tamoxifen: Women who took the drug tamoxifen to prevent or treat breast cancer are at increased risk of uterine cancer.

Prior Pelvic Radiation Therapy: Women who had radiation therapy to the pelvis are at increased risk of uterine cancer.

Family History: Women with a mother, sister or daughter with uterine cancer are at increased risk of developing the disease. Also, women in families that have an inherited form of colorectal cancer (known as Lynch syndrome) are at increased risk of uterine cancer. A history of polycystic ovarian syndrome, a condition marked by infertility, enlarged ovaries and menstrual problems, also increases risk.

Signs and Symptoms

The most common symptom of uterine cancer is abnormal vaginal bleeding. It may start as a watery, blood-streaked flow that gradually contains more blood. After menopause, any vaginal bleeding is abnormal. These are common symptoms of uterine cancer:

- Abnormal vaginal bleeding, spotting or discharge
- Pain or difficulty when emptying the bladder
- Pain during sex
- Pain in the pelvic area

Any of these signs/symptoms may be caused by cancer or by other, less serious health problems. If you have any of these signs/symptoms, see your healthcare provider.

Uterine Cancer Screening

Currently, there is no standard or routine screening test for the early detection of uterine cancer in average-risk women. However, most cases (67 percent) are diagnosed at an early stage because of postmenopausal bleeding. Women are encouraged to report any unexpected bleeding or spotting to their healthcare provider.

Technical Notes

Age-Adjusted Rate: A summary rate that is a weighted average of age-specific rates, where the weights represent the age distribution of a standard population (direct adjustment). The incidence and mortality rates presented in this report were standardized to the age distribution of the 2000 U.S. Standard Population. Under the direct method, the population was first divided into 19 five-year age groups, i.e., <1, 1-4, 5-9, 10-14, 15-19...85+, and the age-specific rate was calculated for each age group. Each age-specific rate was then multiplied by the standard population proportion for the respective age group.

Average Annual Number: The number of cases or deaths diagnosed per year, on average, for the time period of interest (e.g., 2011-2015). Average annual numbers are calculated by summing the number of cases or deaths for a given time period, dividing by the number of years that comprise the time period and rounding to the nearest whole number.

Census Data: The 1996-2015 rates were calculated using population estimates from the U.S. Census Bureau and National Center for Health Statistics. Population data were compiled from bridged-race intercensal population estimates for July 1, 1990-July 1, 1999; revised bridged-race intercensal population estimates for July 1, 2000-July 1, 2004 (released 10/26/2012); revised bridged-race intercensal population estimates for July 1, 2005-July 1, 2009 (released 6/26/2014) and vintage 2017 bridged-race postcensal population estimates for July 1, 2010-July 1, 2017 (released 6/27/2018).

Incidence: The number of cases diagnosed during a specified time period (e.g., 2011-2015). Uterine cancer cases were defined as follows: International Classification of Diseases for Oncology, Third Edition (ICD-O-3), codes C540-C549; C559.

Invasive Cancer: A malignant tumor that has infiltrated the organ in which the tumor originated. Invasive cancers consist of those diagnosed at the local, regional, distant and unstaged/missing stages. Only invasive cancers were included in the calculation of incidence rates in this document.

Mortality: The number of deaths during a specified time period (e.g., 2011-2015). Uterine cancer deaths were defined as follows: International Statistical Classification of Diseases and Related Health Problems, Ninth Edition (ICD-9), codes 179 and 182 for 1996-1998 and International Statistical Classification of Diseases and Related Health Problems, Tenth Edition (ICD-10), codes C540-C559 for 1999-2015.

Rate: The number of cases or deaths per unit of population (e.g., per 100,000 persons) during a specified time period (e.g., 2011-2015). Rates may be unstable and are not presented when the count is less than five.

Relative Survival Probability: The percentage of people who are alive at a designated time period (usually five years) after a cancer diagnosis divided by the percentage expected to be alive in the absence of cancer based on normal life expectancy. It does not distinguish between patients who have no evidence of cancer and those who have relapsed or are still in treatment.

Stage at Diagnosis: The degree to which a tumor has spread from its site of origin at the time of diagnosis. Cancer stage is often related to survival and is used to select appropriate treatment. Patients with early stage disease often have better long-term survival, and detecting cancers at an early stage may lead to a reduction in mortality. The stages of cancer, in the order of increasing spread, are *in situ*, local, regional and distant. *In situ* and localized tumors are referred to as early stage tumors, and regional and distant tumors are termed late stage. Cancers diagnosed at the local, regional, distant and unstaged/missing stages are categorized as invasive.

in situ—Noninvasive cancer that has not penetrated surrounding tissue.

Local—A malignant tumor confined entirely to the organ of origin.

Regional—A malignant tumor that has extended beyond the organ of origin directly into surrounding organs or tissues or into regional lymph nodes.

Distant—A malignant tumor that has spread to parts of the body (distant organs, tissues and/or lymph nodes) remote from the primary tumor.

Unstaged/Missing—Insufficient information is available to determine the stage or extent of the disease at diagnosis.

Table 4. Uterine Cancer: Average Annual Number and Age-adjusted Rates of Cases and Deaths per 100,000 Females by County of Residence, Ohio and the United States, 2011-2015

	Incidence		Mortality			Incidence		Mortality	
	Cases	Rate	Deaths	Rate		Cases	Rate	Deaths	Rate
Ohio	2,225	29.2	397	5.0	Lawrence	13	31.2	3	6.3
U.S.		26.0		4.6	Licking	35	31.3	7	6.0
Adams	5	25.4	<1	*	Logan	10	33.1	<1	*
Allen	17	24.6	5	6.7	Lorain	58	27.1	12	5.4
Ashland	12	32.3	2	4.5	Lucas	76	26.3	14	5.1
Ashtabula	20	29.4	5	6.2	Madison	8	34.0	1	4.2
Athens	7	24.2	1	3.7	Mahoning	47	26.3	9	4.5
Auglaize	8	24.9	2	5.3	Marion	11	25.6	3	6.3
Belmont	16	30.1	3	4.1	Medina	32	27.4	7	6.2
Brown	8	28.6	<1	*	Meigs	5	33.8	1	6.2
Butler	58	26.3	10	4.4	Mercer	9	34.6	3	10.9
Carroll	6	31.5	1	5.2	Miami	16	21.6	3	3.6
Champaign	9	32.7	1	4.1	Monroe	2	25.2	<1	*
Clark	28	30.1	4	4.5	Montgomery	94	25.4	18	4.4
Clermont	36	28.8	5	4.2	Morgan	3	33.9	1	9.5
Clinton	7	24.1	<1	*	Morrow	8	37.9	<1	*
Columbiana	19	26.9	3	3.5	Muskingum	22	39.4	2	3.1
Coshocton	11	41.9	2	6.2	Noble	3	35.2	<1	*
Crawford	13	45.1	2	5.9	Ottawa	9	26.0	2	3.9
Cuyahoga	292	32.4	55	5.8	Paulding	4	31.5	<1	*
Darke	12	32.7	1	3.7	Perry	6	29.9	1	5.0
Defiance	9	37.5	1	4.0	Pickaway	10	28.7	2	5.6
Delaware	30	28.2	3	3.7	Pike	8	42.6	<1	*
Erie	19	33.4	2	3.6	Portage	29	28.3	4	3.8
Fairfield	25	27.3	4	4.2	Preble	10	31.6	<1	*
Fayette	6	32.8	1	5.5	Putnam	6	29.2	1	6.4
Franklin	208	31.4	41	6.4	Richland	24	27.6	5	5.2
Fulton	8	26.9	4	13.2	Ross	16	33.0	2	4.9
Gallia	5	26.6	1	4.7	Sandusky	12	29.0	2	3.1
Geauga	22	31.0	3	4.1	Scioto	17	33.8	3	4.4
Greene	26	25.4	5	4.7	Seneca	10	28.5	2	5.5
Guernsey	10	35.2	1	3.3	Shelby	9	26.5	1	4.3
Hamilton	149	28.9	31	5.8	Stark	68	26.4	11	3.6
Hancock	17	35.5	2	4.5	Summit	99	26.9	18	4.8
Hardin	5	26.5	<1	*	Trumbull	40	26.5	7	4.2
Harrison	3	27.6	1	8.7	Tuscarawas	20	31.1	3	4.6
Henry	6	34.9	<1	*	Union	10	31.6	<1	*
Highland	11	38.8	2	5.4	Van Wert	6	27.4	1	5.2
Hocking	6	30.1	1	4.9	Vinton	3	28.2	<1	*
Holmes	5	23.9	1	5.5	Warren	32	25.1	5	4.1
Huron	9	23.2	2	4.8	Washington	14	30.5	2	4.2
Jackson	7	34.0	<1	*	Wayne	19	24.8	4	4.9
Jefferson	14	25.6	3	4.9	Williams	7	30.8	1	4.6
Knox	15	38.1	2	5.4	Wood	21	27.7	4	5.0
Lake	55	32.6	9	5.1	Wyandot	5	33.6	<1	*

Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2018; Bureau of Vital Statistics, Ohio Department of Health, 2018; Surveillance, Epidemiology and End Results (SEER) Program, National Cancer Institute, 2018.

*Rate not presented when the count for 2011-2015 is less than five (i.e., the average annual count is less than one).

Sources of Data and Additional Information

National Cancer Institute:

<https://www.cancer.gov/types/uterine>

American Cancer Society:

<https://www.cancer.org/cancer/endometrial-cancer.html>

<https://www.cancer.org/cancer/uterine-sarcoma.html>

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