



Testicular Cancer In Ohio, 1999-2003



This Report on Testicular 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
- Incidence Rates by Histology
- Survival Probability and Stage at Diagnosis
- Trends in Stage at Diagnosis
- Risk Factors
- Clinical Trials Information
- Sources of Data and Additional Information

Testicular Cancer Incidence and Mortality

Testicular cancer made up 1.1 percent of incident (newly diagnosed) cancers reported to the Ohio Cancer Incidence Surveillance System (OCISS) from 1999 to 2003 (Table 1). From 1999 to 2003, the average annual age-adjusted testicular cancer incidence rate in Ohio was 5.4 cases per 100,000 males, which was nearly the same as the average annual age-adjusted U.S. (SEER¹) incidence rate of 5.3 cases per 100,000 males for 2000-2003. Reporting of invasive testicular cancer in Ohio is estimated to be greater than 100 percent complete in 1999-2003, allowing for valid comparisons to U.S. data. The 1999-2003 Ohio age-adjusted mortality rate for testicular cancer of 0.3 deaths per 100,000 males was identical to the 2000-2003 U.S. (NCHS²) mortality rate.

Table 1: Leading Cancer Sites/Types and Testicular Cancer: Average Annual Number (N), Percent and Age-adjusted Rates of Invasive Cancer Cases and Cancer Deaths in Ohio, 1999-2003, with Comparison to the US (SEER and NCHS), 2000-2003

Incidence	N	%	Ohio		U.S.		Mortality	N	%	Ohio		U.S.	
			Rate	Rate	Rate	Rate							
All Sites/Types	55,813		471.3	471.0			24,989		208.4	194.5			
Lung and Bronchus	9,014	16.2%	75.3	64.8			7,339	29.4%	61.2	55.1			
Breast (Female)	8,235	14.8%	126.4	129.1			2,652	10.6%	22.1	19.8			
Prostate	7,887	14.1%	153.8	170.3			1,941	7.8%	28.5	25.8			
Colon and Rectum	6,625	11.9%	55.3	52.4			1,290	5.2%	29.3	28.5			
Urinary Bladder	2,657	4.8%	22.1	20.9			1,236	4.9%	10.3	10.5			
Non-Hodgkin's Lymphoma	2,265	4.1%	19.0	19.1			1,038	4.2%	8.7	7.7			
..													
Testicular	301	1.1%	5.4	5.3			18	0.7%	0.3	0.3			

Source: Ohio Cancer Incidence Surveillance System, Chronic Disease and Behavioral Epidemiology Section and the Vital Statistics Program, Ohio Department of Health, 2006.

[1] SEER: Surveillance, Epidemiology and End Results Program, National Cancer Institute, 2006.

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

Technical Notes:

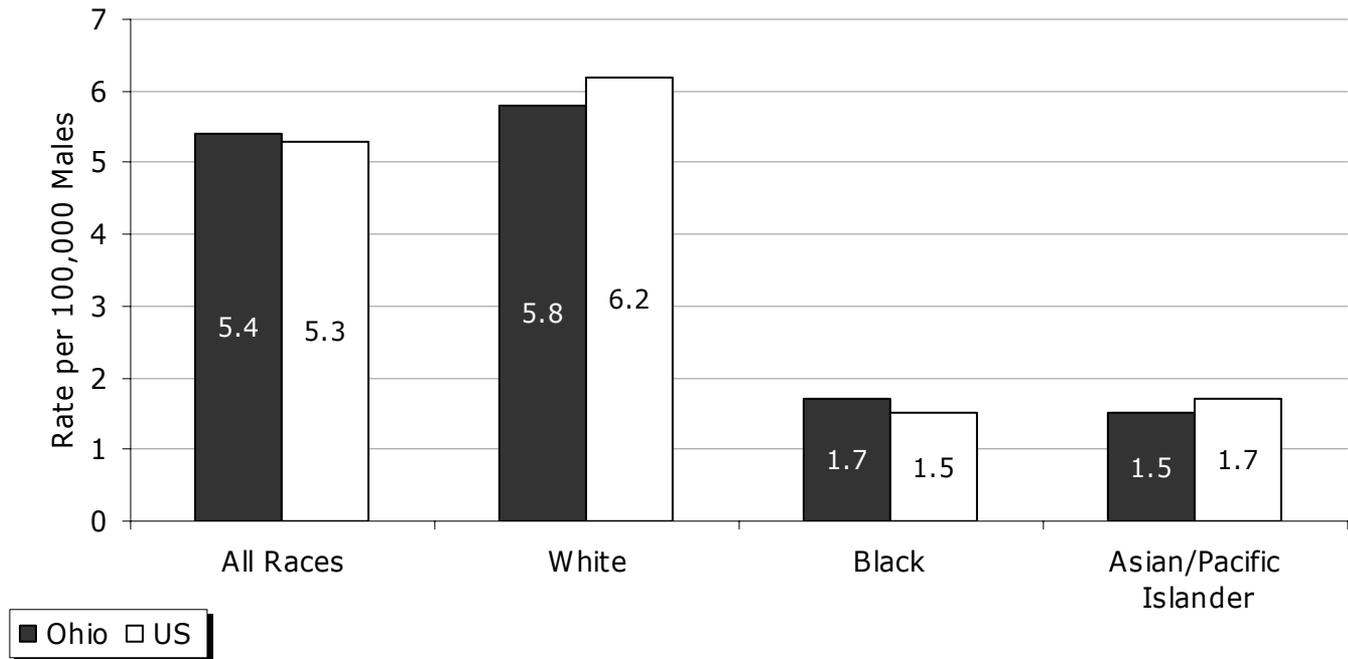
[1] Testicular cancer cases were defined as follows: International Classification of Diseases for Oncology, Third Edition (ICD-O-3), codes C620-C629, excluding histology types 9590-9989. Testicular cancer deaths were defined as follows: International Statistical Classification of Diseases and Related Health Problems, Tenth Edition (ICD-10), codes C620-C629.

[2] The 1999-2003 Ohio rates were calculated using the following populations: bridged-race intercensal estimates for July 1, 1999 (U.S. Census Bureau, 2004) and vintage 2004 postcensal estimates for July 1, 2000-2003 (U.S. Census Bureau, 2005). Rates were direct age-adjusted to the U.S. 2000 standard population.

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

Testicular Cancer Incidence in Ohio Compared to the United States

Figure 1: Cancer of the Testis: Average Annual Age-adjusted Incidence Rates per 100,000 Males, by Race in Ohio, 1999-2003, with Comparison to the US (SEER), 2000-2003



Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2006, and the Surveillance, Epidemiology and End Results Program, National Cancer Institute, 2006.

Figure 1 shows the testicular cancer age-adjusted incidence rates among whites were more than three times greater than those of blacks and Asian/Pacific Islanders in both Ohio and the United States. The Ohio testicular cancer incidence rates were higher than the rates for the United States for blacks, while whites and Asian/Pacific Islanders in Ohio had lower rates compared to those in the United States. For all races combined, the Ohio testicular cancer incidence rate (5.4 per 100,000 males) was slightly greater than that of the United States (5.3 per 100,000 males).

Testicular Cancer Cases and Rates by County of Residence

Figure 2 presents 1999-2003 average annual age-adjusted testicular cancer incidence rates by county of residence. There appears to be some geographic difference in Ohio testicular cancer incidence rates. Many counties with the highest incidence rates were located in the northwestern and southeastern portions of the state. However, case counts were too small in 17 counties for stable rates to be calculated, which may influence the geographic pattern of testicular cancer incidence in Ohio. The following counties had the highest incidence rates for this time period (10.2 or more cases per 100,000 residents): Adams (N = 2), Fulton (N = 2), Hocking (N = 1), Knox (N = 3), Mercer (N = 2) and Putnam (N = 2).

Testicular Cancer Cases and Rates by Age at Diagnosis and Race

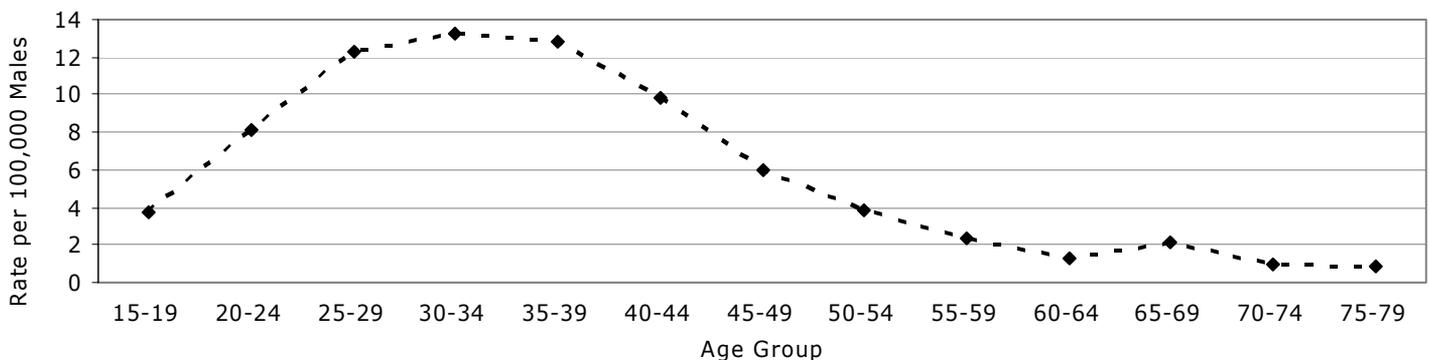
Table 2: Cancer of the Testis: Average Annual Numbers of Cases (N), Incidence Rates per 100,000 Males and Cumulative Percentages (Cum%), by Age Group and Race in Ohio, 1999-2003

Age Group	White			Black			All Races		
	N	Rate	Cum%	N	Rate	Cum%	N	Rate	Cum%
0-14	<1	*	0.6%	<1	*	3.8%	2	0.2	0.8%
15-19	15	4.1	5.9%	<1	*	9.6%	16	3.7	6.0%
20-24	29	8.9	16.3%	<1	*	17.3%	31	8.1	16.2%
25-29	39	12.8	30.3%	1	3.1	30.8%	44	12.3	30.8%
30-34	48	14.3	47.5%	1	2.6	42.3%	52	13.3	48.1%
35-39	50	13.7	65.7%	2	3.5	57.7%	54	12.8	66.1%
40-44	42	10.5	80.7%	2	3.3	73.1%	44	9.8	80.8%
45-49	24	6.4	89.3%	<1	*	80.8%	25	6.0	89.2%
50-54	14	4.1	94.2%	<1	*	84.6%	15	3.9	94.1%
55-59	5	2.1	96.2%	1	4.3	94.2%	7	2.4	96.3%
60-64	3	1.3	97.1%	<1	*	96.2%	3	1.3	97.2%
65-69	4	2.3	98.5%	0	*	96.2%	4	2.1	98.5%
70-74	2	1.1	99.1%	0	*	96.2%	2	1.0	99.0%
75-79	1	0.8	99.4%	<1	*	98.1%	1	0.9	99.4%
80-84	1	1.6	99.9%	<1	*	100.0%	<1	*	99.9%
85+	<1	*	100.0%	0	*	100.0%	<1	*	100.0%

Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2006.

*Rates may be unstable and are not presented when the case count for 1999-2003 is less than five (i.e., N<1).

Figure 3: Cancer of the Testis: Age-specific Incidence Rates per 100,000 Males in Ohio, 1999-2003

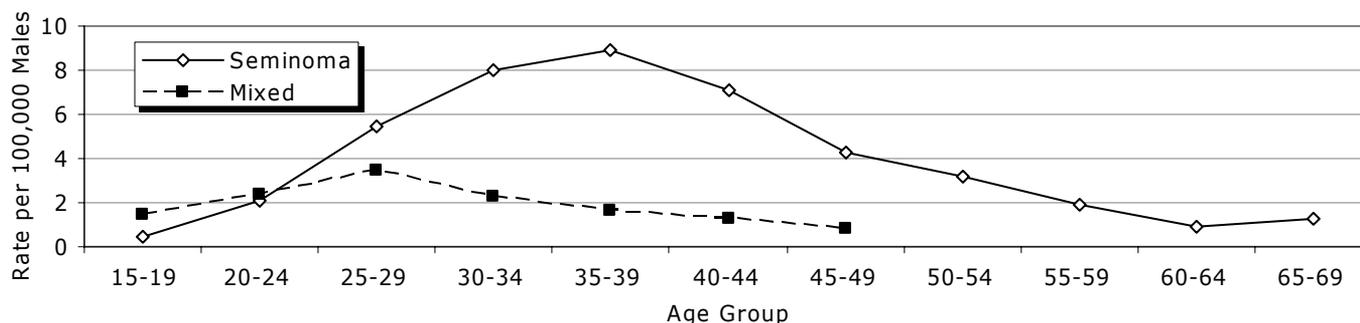


Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2006.

Table 2 presents age-specific incidence rates for testicular cancer by race, and Figure 3 shows age-specific incidence rates for all races combined. The median age at diagnosis of testicular cancer occurred in the 35 to 39 years age group for both whites and blacks. For all races combined, Figure 3 reveals a sharp increase in testicular cancer incidence rates from ages 15-19 to ages 30-34, followed by a gradual decline. Among whites, testicular cancer incidence rates increased with advancing age group to ages 30-34 years and declined among males 35 years and older. Among blacks, there were too few testicular cancers to produce reliable rates in more than half of the age groups. The cumulative percentages in Table 2 indicate that more than 80 percent of testicular cancers were diagnosed among males under age 45 years.

Testicular Cancer By Histology

Figure 4: Cancer of the Testis: Age-specific Incidence Rates per 100,000 Males, by Histological Subgroup (Seminoma, Mixed) in Ohio, 1999-2003



Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2006.

Technical Note: Rates for the mixed histological subgroup for age groups over 49 years may be unstable and are not presented because the case counts for 1999-2003 are less than five (i.e., $N < 1$).

Histology refers to the cancer tissue or cell type. For testicular cancer, we examined three primary histological subgroups: seminoma, mixed (teratoma and seminoma) and all other histologies. Seminoma is a type of testicular cancer that develops from cells that give rise to sperm cells, and teratoma is a type of testicular cancer that develops from other (non-sperm) cells. The mixed histological subgroup contains both seminoma and teratoma characteristics. The other histological subgroup comprises less than 5 percent of testicular cancers and includes choriocarcinomas, Leydig cell tumors and unspecified histologies. Figure 4 shows age-specific incidence rates for the seminoma and mixed histological subgroups. For seminoma, incidence rates increased until ages 35-39 years, declined among males 40-64 years and then increased slightly in the 65-69 years age group. For the mixed histological subgroup, the incidence rate reached a peak in the 25-29 years age group, followed by a decline among males ages 30 and older.

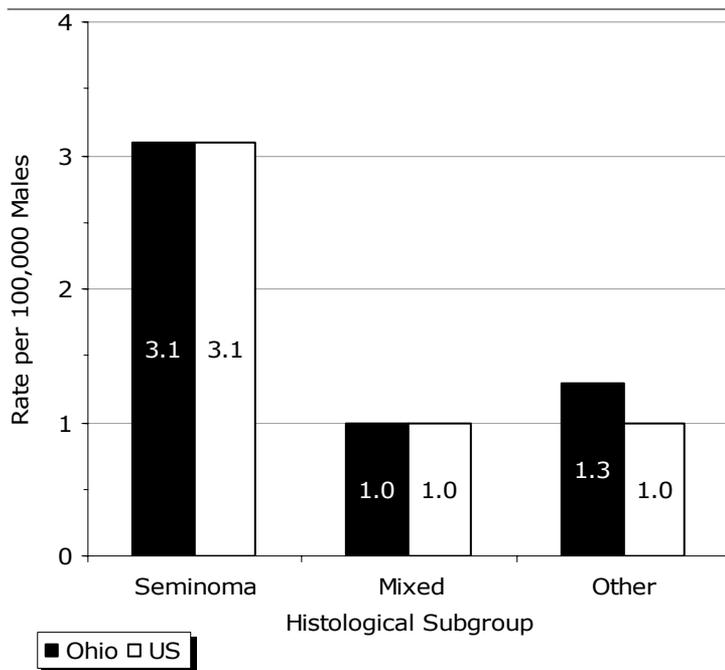


Figure 5: Cancer of the Testis: Age-adjusted Incidence Rates per 100,000 Males, by Histological Subgroup (Seminoma, Mixed, Other) in Ohio, 1999-2003, with Comparison to the US (SEER), 2000-2003

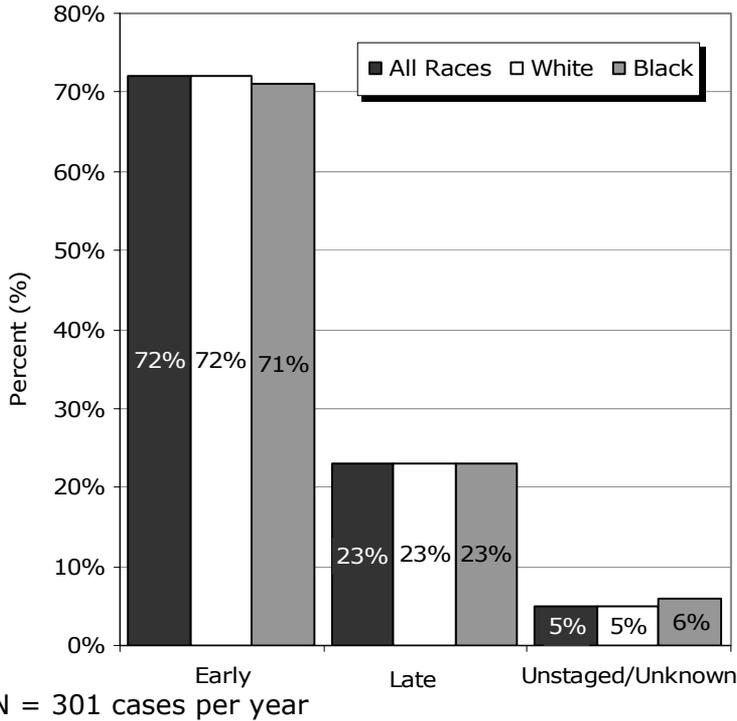
Figure 5 shows the testicular cancer incidence rates according to histology for Ohio and the United States. The incidence rates of the seminoma and mixed histological subgroups in Ohio were identical to those of the United States, while the rate of the other histological subgroup is 30 percent greater in Ohio. For the most common histological subgroup (seminoma), white males in the United States had a greater incidence rate (3.6 per 100,000 males), compared to white males in Ohio (3.3 per 100,000 males), while the incidence rate among black males in Ohio was identical to the rate for black males in the United States.

Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2006, and the Surveillance, Epidemiology and End Results Program, National Cancer Institute, 2006.

Technical Note: Seminoma testicular cancer cases were defined as ICD-O-3 histology codes 9061-9063 and mixed testicular cancer cases were defined as ICD-O-3 histology code 9085. All testicular cancers with histology codes other than those for seminoma and mixed histologies were categorized as "Other Histologies."

Testicular Cancer Cases and Survival by Stage at Diagnosis

Figure 6: Cancer of the Testis: Proportion of Cases (%) by Stage at Diagnosis in Ohio, 1999-2003



The stage at diagnosis of testicular 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 1999-2003 Ohio data presented in Figure 6 reveal the percentage of testicular cancers diagnosed at the *in situ* or localized (early) stage was 72 percent for whites and 71 percent for blacks. Twenty-three percent were diagnosed at later (regional and distant) stages, and the proportion of whites diagnosed at later stages was identical to that of blacks. The percentage of testicular cancer cases reported with an unstaged/unknown stage was slightly greater among blacks (6 percent) compared to whites (5 percent).

Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2006.

Table 3 shows the U.S. (SEER) five-year survival probability for testicular cancer in 1996-2002 was 95.7 percent for all stages combined. Five-year survival probabilities were 99.5 percent at the localized stage, 96.3 percent at the regional stage and 70.1 percent for distant-stage tumors. The five-year survival probability for all stages combined was higher for whites (95.9 percent) compared to blacks (90.0 percent), and was greater for those under 50 years of age at diagnosis (95.9 percent) compared to those 50 years and older (92.1 percent).

Screening for testicular cancer involves examination of the testes by a physician. At present, the efficacy of additional potential screening tests are being evaluated by the National Cancer Institute.

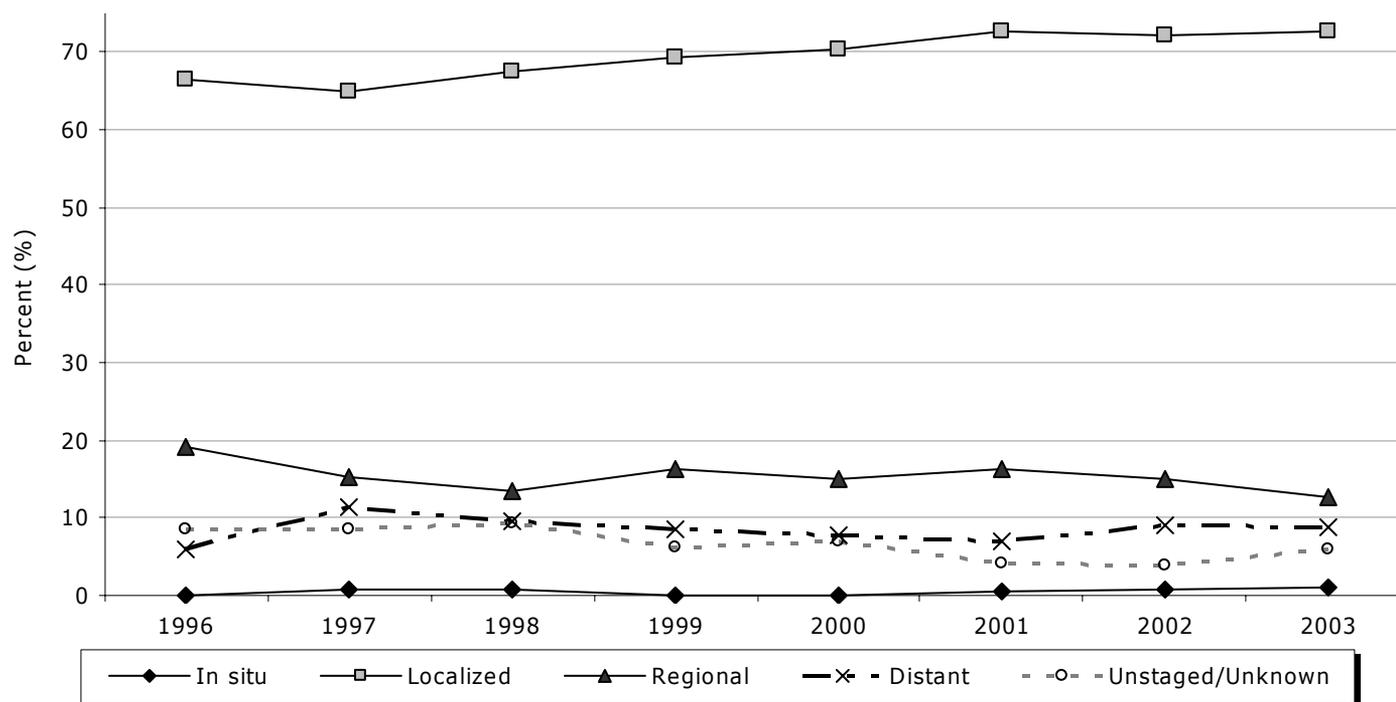
Table 3: Cancer of the Testis: Five-year Survival Probability (%) by Stage at Diagnosis in the US (SEER), 1996-2002

Stage	Overall Five-year Survival Probability (%)
All Stages	95.7%
Localized	99.5%
Regional	96.3%
Distant	70.1%

Source: SEER Cancer Statistics Review 1975-2003, National Cancer Institute, 2006.

Testicular Cancer Trends in Stage at Diagnosis

Figure 7: Testicular Cancer:
Trend in the Proportion of Cases (%) by Stage at Diagnosis in Ohio, 1996-2003



Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2006.

Figure 7 shows the distribution of stage at diagnosis of testicular cancer according to year of diagnosis from 1996 to 2003. The proportions of testicular cancer cases diagnosed at the *in situ* stage remained less than or equal to 1 percent from 1996 to 2003. The proportion diagnosed at the localized stage increased from 66 percent in 1996 to 73 percent in 2003, while the proportion diagnosed at the regional stage decreased from 19 percent in 1996 to 13 percent in 2003. A directional trend in distant stage testicular cancer was not apparent from 1996 to 2003. The proportion with an unstaged/unknown stage at diagnosis decreased from 8 percent in 1996 to 6 percent in 2003.

There has been very little change in the average annual, age-adjusted incidence and mortality rates of testicular cancer from 1996 to 2003. Therefore, these rates are not shown in figures.

Did You Know?

Unlike most other cancers affecting adults, about 90 percent of testicular cancers are diagnosed among men under 50 years of age.

Risk Factors for Testicular Cancer

- **Age** - The majority of testicular cancers are diagnosed between the ages of 15 and 40 years.
- **Race and ethnicity** - Risk for white males is five to 10 times the risk for black males and two times the risk for Asian males. Risk for Hispanics falls between that of Asians and non-Hispanic whites.
- **Undescended testicles (cryptorchidism)** - A condition where one or both testicles do not descend into the scrotum before birth. The condition may remain a risk factor even if corrected over time or with surgery/treatment.
- **Abnormal testicular development** - Increases risk.
- **Klinefelter's syndrome** - A sex chromosome disorder that may be characterized by low levels of male hormones, sterility, breast enlargement and small testes, increases risk.
- **Personal history of testicular cancer** - Increases risk.
- **Family history of testicular cancer** - Increases risk.
- **Carcinoma *in situ*** - *In situ* testicular cancer increases risk of invasive cancer.
- **Atypical moles** - Spots or moles on the skin of the back, chest, belly and face have been linked to increased risk of testicular cancer in at least two studies.
- **HIV infection and AIDS** - Increase risk.
- **Body size/shape** - Tall, slim men have an increased risk. However, the increased testicular cancer risk does not outweigh the overall health benefits of being slim.

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 testicular 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
 - **Comprehensive Cancer Center at The Ohio State University/The 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>
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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
 - **National Cancer Institute:**
<http://www.cancer.gov/cancertopics/types/testicular>
 - **American Cancer Society:**
http://www.cancer.org/docroot/CRI/CRI_2x.asp?sitearea=&dt=41
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