TESTICULAR CANCER

Includes invasive cancer only. Does not include carcinoma in situ or metastatic cancer.

Background

This case definition was developed by the Armed Forces Health Surveillance Division (AFHSD) for the purpose of descriptive epidemiological reports on invasive cancers among active duty Service members.[1] The case definition uses the "standard" AFHSD oncology case definition.

Clinical Description

Testicular cancer typically occurs in men between the ages of 15 and 35.[2] A painless testicular mass is the most common presentation, although some patients will present with diffuse pain or swelling. Germ cell tumors account for approximately 95% of tumors of the testes, with the two main types being seminomas and nonseminomas. Seminoma tumors are generally slow growing, contain one cell type, are confined to the testis, and are extremely radiosensitive. Nonseminoma tumors are more common, faster growing, comprise multiple cell types, and require more aggressive treatment. Risk factors include white race, cryptorchidism, testicular atrophy, and family history. Orchiectomy followed by radiation and chemotherapy constitute the standard treatment. Testicular cancer is considered highly curable with the overall five-year survival rate exceeding 95%.[3]

Case Definition and Incidence Rules *(June 2012 - present)*

For surveillance purposes, a case of testicular cancer is defined as:

- *One hospitalization* with a case defining diagnosis of testicular cancer (see ICD9 and ICD10 code lists below) in the *first* diagnostic position; or
- *One hospitalization with a procedure code* indicating radiotherapy, chemotherapy, or immunotherapy treatment (see ICD9 and ICD10 code lists below) in the *first* diagnostic position; AND a case defining diagnosis of testicular cancer (see ICD9 and ICD10 code lists below) in the *second* diagnostic position; or
- *Three or more outpatient medical encounters*, occurring *within a 90-day period*, with a case defining diagnosis of testicular cancer (see ICD9 and ICD10 code lists below) in the *first or second* diagnostic position.

Incidence rules:

- For individuals who meet the case definition:

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[1] Armed Forces Health Surveillance Center. Incident diagnoses of cancers and cancer-related deaths, active component, U.S. Armed Forces, 2005-2014. *MSMR.* 2016; 23(7): 23-31.

[2] Kinkade, S. Testicular Cancer. *American Family Physician*. 1999 May; 59(9): 2539-2544.

[3] Testicular Cancer. National Cancer Institute. Available at: http://www.cancer.gov/cancertopics/types/testicular. Accessed April 2026.

Case Definition and Incidence Rules *(continued)*

- The incidence date is considered the date of the first hospitalization or outpatient medical encounter that includes a case defining diagnosis of testicular cancer.
- An individual is considered an incident case *once per lifetime.*

Exclusions:

- None

Codes

The following ICD9 and ICD10 codes are included in the case definition:

Condition	ICD-10-CM Codes	ICD-9-CM Codes
Testicular cancer	*C62 (malignant neoplasm of testis)*	*186 (malignant neoplasm of testis)*
	C62.0 (malignant neoplasm of *undescended* testis)	186.0 (malignant neoplasm of undescended testis)
	- C62.00 (malignant neoplasm of *unspecified* undescended testis)	
	- C62.01 (malignant neoplasm of undescended *right* testis)	
	- C62.02 (malignant neoplasm of undescended *left* testis)	
	C62.1 (malignant neoplasm of *descended* testis)	186.9 (malignant neoplasm of other and unspecified testis)
	- C62.10 (malignant neoplasm of *unspecified* descended testis)	
	- C62.11 (malignant neoplasm of descended *right* testis)	
	- C62.12 (malignant neoplasm of descended *left* testis)	
	C62.9 (malignant neoplasm of testis, *unspecified* whether descended or undescended)	
	- C62.90 (malignant neoplasm of unspecified testis, *unspecified* whether descended or undescended)	
	- C62.91 (malignant neoplasm of *right* testis, unspecified whether descended or undescended)	

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	- C62.92 (malignant neoplasm of *left* testis, unspecified whether descended or undescended)	

Procedures	**ICD-10-CM Codes**	**ICD-9-CM Codes**
Related treatment procedures *(Radiotherapy, chemotherapy, immunotherapy)*	Z51.0 (encounter for antineoplastic radiation therapy)	V58.0 (radiotherapy)
	Z51.1 (encounter for antineoplastic chemotherapy and immunotherapy)	V58.1 (encounter for chemotherapy and immunotherapy for neoplastic conditions)
	- Z51.11 (encounter for antineoplastic chemotherapy)	- V58.11 (encounter for antineoplastic chemotherapy)
	- Z51.12 (encounter for antineoplastic immunotherapy)	- V58.12 (encounter for antineoplastic immunotherapy)

Development and Revisions

- In 2024, the Defense Health Agency (DHA) Health Surveillance & Epidemiology (HSE) cancer surveillance Sub Working Group (SubWG) evaluated and expanded the list of cancers in the AFHSD cancer report to include breast (female), bladder, brain, cervical, colorectal, kidney (renal), leukemia, liver (hepatic), lung/bronchial, non-Hodgkin lymphoma, ovarian, pancreatic, prostate, stomach (gastric) and testicular cancer.

- In a 2019 *Monthly Surveillance Medical Report (MSMR)* article, analysis of the AFHSD standard oncology case definition revealed the definition had a high positive predictive value (PPV) for capturing cases of common cancers, (e.g., breast, prostate, testicular), and a low-to-moderate PPV for rarer cancers, (e.g., gallbladder, intestinal, laryngeal). Analyses also revealed the case definition was less sensitive for identifying cancers of the brain and nervous system, lung and bronchus, bones and joints, and liver (PPV$\leq$ 50 percent); these cases often represent metastases rather than true incident cases. While the broad application of a single case definition may affect sensitivity and specificity in varying ways for individual cancers, the PPV for all the cancers included in the report are >70 percent, and most have a PPV $\geq$ 90 percent.[4]

- In September of 2015 the case definition was updated to include ICD10 codes.

- The standard AFHSD oncology case definition was originally developed in 2011 by the Armed Forces Health Surveillance Center (AFHSC) in collaboration with a working group of subject matter experts from the Office of the Assistant Secretary of Defense for Health Affairs (ASDHA), the United States Army Public Health Command (USAPHC) and the United States Military Cancer Institute for a report on 10 different *invasive* cancers. The case definition was developed based on reviews of the ICD9 codes, the scientific literature and previous AFHSC analyses.

Case Definition and Incidence Rule Rationale

- In the 2019 *MSMR* article, cases of testicular cancer identified using the standard AFHSD oncology case definition had a PPV of 99.6 percent [CI 97.7-100.0] among a subset of active component and retired officers.[4]

[4] Webber, B, Rogers, A, Pathak, S, Robbins, A. Positive Predictive Value of an Algorithm Used for Cancer Surveillance in the U.S. Armed Forces. *MSMR.* 2019; 26(12):18-23.

- The case finding criteria of *three or more outpatient medical encounters, within a 90-day period,* is used to identify cases that do not meet the other criteria in the definition. Exploratory analysis of Defense Medical Surveillance System (DMSS) data revealed this criterion yielded optimal specificity.[5]

    - A period of 90 days allows for the likelihood that "true" cases of testicular cancer will have second and third encounters within that timeframe. The timeframe is based on the following standards of care: (1) following a biopsy of a clinically suspicious testicular lesion, the average time to obtain a pathology report and definitive diagnosis is 1-3 weeks; (2) individuals whose biopsy results are positive for testicular cancer are likely to have a follow-up visit for treatment within 4 weeks of a definitive diagnosis; and (3) individuals are likely to have follow-up visits to monitor clinical indicators of disease within the 90-day timeframe.[6]

    - The methodology used in this case definition does not try to distinguish laterality; therefore, the diagnoses and associated ICD10 codes for the three or more outpatient medical encounters *are not required to reference the same testis.* While ICD-10-CM does allow investigators to distinguish right and left testicular tumors, analyses of the data revealed the requirement was complicated by the frequent use of the nonspecific codes C62.00 (malignant neoplasm of unspecified undescended testis), C62.1 (malignant neoplasm of unspecified descended testis) and C62.9 (malignant neoplasm of unspecified testis, unspecified weather descended or undescended) making it difficult to assign a tumor to a particular testis. For long term surveillance, attempting to distinguish laterality also makes it more difficult to link data with ICD-9-CM data as ICD9 codes do not distinguish laterality.

    - For outpatient encounters, the incident date is considered the first of the three encounters occurring within the 90-day period, (e.g., if an individual has four testicular cancer codes on 1-Jan-12, 1-Dec-15, 8-Dec-15, and 15-Dec-15, the incident date would be 1-Dec-15; 1-Jan-12 would be considered a screening encounter and dropped).

- To maintain consistency with the standard AFHSD methodology for surveillance of invasive cancers, AFHSD uses a *once per lifetime* incidence rule. The workgroup recognizes individuals may be considered disease free after treatment or after an extended period of time, (e.g., 5 years), with no clinical evidence of disease. Individuals who develop a second primary tumor after being disease free could, theoretically, be counted as a new incident case. However, for surveillance of cancer using administrative, (i.e., billing), data, it is difficult to identify individuals who are disease free after treatment.

- Individuals who have, or develop over time, a second primary cancer in the same, or contralateral testis are only counted once using this definition. While both lesions are considered primary tumors, for surveillance of invasive cancer, AFHSD counts cases (unique individuals), not individual tumors. Investigators interested in capturing the incidence of distinct primary tumors may want to modify the case finding criteria and consider utilizing different data sources such as pathology data or cancer registry data.

- The AFHSD does not exclude individuals with bilateral orchiectomy; however, there may be some benefit to incorporating this exclusion into the methodology. These individuals would contribute to the denominator of the rate, particularly among older age groups. Quantifying the number and percentage of men by age group that have a history of bilateral orchiectomy and comparing that group with the population of men with no history could help clarify the accuracy of the rate.

[5] Detailed information on these analyses is available through AFHSD; reference DMSS Requests #R230308, #R230378 and #R240009.

[6] Testicular cancer. National Comprehensive Cancer Network (NCCN) Guidelines Version 2.2023. https://www.nccn.org/guidelines/recently-published-guidelines; Accessed April 2026.

Code Set Determination and Rationale

- Procedure codes (ICD10 and CPT) indicating surgical treatment of individual cancers such as hysterectomy, mastectomy, prostatectomy, and other procedures unique to certain types of cancers are, generally, not included in AFHSD code sets. While procedure codes may increase the specificity of case finding criteria in select circumstances, analyses can be labor intensive, and the effort does not necessarily guarantee a better case definition.

  For the purposes of this case definition, the AFHSD conducted a sensitivity analysis to evaluate whether restricting the case finding criteria to a case-defining diagnosis of testicular cancer *with* an orchiectomy *within 90 days* would improve specificity.[7] Of the 1,135 incident cases, 73% (n=832) had a procedure within 90 days. Comparison between the baseline cohort and the surgical subset demonstrated consistent demographic and temporal trends; however, incidence rates for pilots and Air Force members were attenuated under the stricter criteria. Due to the minimal difference between cohorts and the validated performance of the current case definition (Weber et al.), the DHA HSE cancer surveillance SubWG elected to maintain the existing case definition.[4] Investigators requiring maximum precision or specificity may want to consider including the following orchiectomy procedure codes:

  CPT: 54520 (orchiectomy, testicular inguinal approach), 54522 (orchiectomy, partial), 54530 (orchiectomy, radical, for tumor; inguinal approach), 54535 (orchiectomy, radical, for tumor, with abdominal exploration), 54690 (laparoscopy, surgical; orchiectomy).

  PR: 0VB9*, 0VBB*, 0VBC* (*include subsequent digits)

- *Screening for disease codes:* ICD10 Z12.xx / ICD9 V76.xx (encounter for screening for malignant neoplasms) are not included in the code set. Screening codes are used for "testing for disease or disease precursors in seemingly well individuals so that early detection and treatment can be provided for those who test positive for the disease, (e.g., screening mammogram)."[8] They would not be used for follow-up medical encounters of a specific disease.

- *Personal history of malignant neoplasms:* (ICD10 Z85.xx) codes are not included in the code set. While these codes may be beneficial for identifying individuals with a history of cancer, analysis of administrative data reveal these codes lack the specificity to count incident cancer cases and are inconsistently used by providers. [9] Given these findings, the AFHSD does not use personal history codes to exclude prevalent cases, (i.e., individuals with a history of cancer), nor to identify individuals who are disease free after treatment.

  Personal history codes are intended to be used by providers for individuals who have a history of cancer *and* documented evidence in the medical record that the malignancy has been "excised or eradicated and all treatment is complete." They are not used for a "self-reported" history of malignancy, and they should be used in conjunction with ICD10 codes for follow-up visits (Z08- encounter for follow-up examination after completed treatment for a malignant neoplasm), aftercare visits (Z51.0 - encounter for antineoplastic radiation therapy; Z51.1- encounter for

[7] Detailed information on this analysis is available through AFHSD; reference DMSS Requests #R240240.

[8] ICD-10-CM Official Guidelines for Coding and Reporting. FY 2022–Updated April 1, 2022. (October 1, 2021-September 30, 2022. https://stacks.cdc.gov/view/cdc/126426. Accessed April 2026.

[9] Analysis performed by the Defense Centers of Public Health-Dayton. Encounters with at least one Z85.x code in any diagnostic position (dx1- dx20) were pulled from Comprehensive Ambulatory Professional Encounter Records (CAPER) and Standard Inpatient Data Records (SIDR) for all Tri-Service beneficiaries between October 2016 and March 2024. A total of 546,962 encounters were identified. Of these, 68,395 (13%) had at least one neoplasm diagnosis (ICD10 C00-D49). With administrative data, there is no way to determine if the neoplasm codes refer to a resolved malignancy or a new cancer diagnosis. Records with conjunction codes for follow-up (Z08), aftercare (Z51.[0.1] and screening (Z12) were queried: 420,236 (77%) had no conjunction codes in any diagnostic position suggesting providers use personal history codes independent of the purpose of the visit and potentially inconsistently.

antineoplastic chemotherapy and immunotherapy), and screening visits (Z12 - encounter for screening for malignant neoplasms).[10]

Reports

The AFHSD reports on testicular cancer in the following reports:

- Periodic *MSMR* articles.

Review

Apr 2026	Case definition reviewed and updated by the DHA HSE cancer surveillance SubWG; approved by the AFHSD Surveillance Methods and Standards (SMS) working group.
Jun 2019	Case definition reviewed and updated by the AFHSD SMS working group.
Sep 2015	Case definition reviewed and updated by the Armed Forces Health Surveillance Branch (AFHSB) SMS working group.
Apr 2013	Case definition reviewed and adopted by the AFHSC SMS working group.
Jun 2012	Case definition developed by the AFHSC, ASDHA, USAPHC and the United States Military Cancer Institute.

Comments

- *Invasive cancer*: The complete ICD10 code list for all "malignant neoplasms of male genital organs" includes the following codes (C60-C63).[11] The AFHSD has developed case definitions* for prostate cancer and testicular cancer.
  - C60 Malignant neoplasm of penis
  - C61 Malignant neoplasm of prostate*
  - C62 Malignant neoplasm of testis*
  - C63 Malignant neoplasm of other and unspecified male genitalia
- *In situ cancer:* The complete code set for "carcinoma in situ of other and unspecified male genital organs" includes the following codes (D07.4-D07.69).[11] There is no specific ICD10 code for testicular carcinoma in situ, also known as intratubular germ cell neoplasia (IGCN) or testicular intraepithelial neoplasia (TIN): the condition is coded with D07.60. The AFHSD uses the standard oncology case definition for surveillance of in situ cancers and is in the process of developing definitions for select in situ cancers.
  - D07.4 Carcinoma in situ of penis
  - D07.5 Carcinoma in situ of prostate

[10] Bredehoeft, Emily. Clear Up Confusion as to When Cancer Becomes "History Of." American Academy of Professional Coders (AAPC). Accessed April 2026.

[11] ICD-10-CM. The International Classification of Disease, Tenth Revision, Clinical Modification. https://icd10cmtool.cdc.gov/?fy=FY2025. Accessed April 2026.

- D07.6 Carcinoma in situ of other and unspecified male genital organs
  - D07.60 Carcinoma in situ of unspecified male genital organs (*includes testicular carcinoma in situ*)
  - D07.61 Carcinoma in situ of scrotum
  - D07.69 Carcinoma in situ of other male genital organs