

BREAST CANCER

Includes Invasive Cancers Only; Does Not Include Ductal Carcinoma In Situ (DCIS), Lobular Carcinoma In Situ (LCIS) and Male Breast 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

Clinical Description

Breast cancer forms in the tissues of the breast, most commonly in the ducts and lobules. After skin cancer, breast cancer is the most common type of cancer among women in the United States and the second leading cause of cancer deaths (after lung cancer). When the breast cancer tumor is small and is producing no symptoms, the prospects for successful treatment and cure are highest. For this reason, early detection through mammography is strongly recommended. A family history of breast cancer and the presence of certain genetic mutations carry an increased risk, but most women who develop breast cancer have neither of these factors. Other risk factors for breast cancer include advancing age, overweight or obesity, use of menopausal hormone therapy, physical inactivity, and alcohol consumption. Treatment of breast cancer may involve surgery, radiotherapy, chemotherapy, and hormone therapy.²

Case Definition and Incidence Rules

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

- *One hospitalization* with a case defining diagnosis of breast cancer (see ICD9 and ICD10 code lists below) in the *first* diagnostic position; or
- *One hospitalization with a V or Z-code* indicating a radiotherapy, chemotherapy, or immunotherapy treatment procedure (see ICD9 and ICD10 code lists below) in the *first* diagnostic position; AND a case defining diagnosis of breast cancer (see ICD9 and ICD10 code lists below) in the *second* diagnostic position; or
- *Three or more outpatient or Theater Medical Data Store (TMDS) medical encounters*, occurring *within a 90-day period*, with a case defining diagnoses of breast 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 American Cancer Society. *Cancer Facts & Figures 2022*. Atlanta: American Cancer Society; 2022. <https://www.cancer.org/research/cancer-facts-statistics.html>. Accessed November 2022.



Case Definition and Incidence Rules *(continued)*

- For hospitalizations, the incidence date is considered the date of the first medical encounter that includes a case defining diagnosis of breast cancer.
- For outpatient medical encounters, the incidence date is considered the first of the three encounters occurring *within* the 90-day period (*see Case Definition and Incidence Rule Rationale* below) that includes a case defining diagnosis of breast 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
Breast Cancer	<i>C50 (malignant neoplasm of breast)</i>	<i>174 (malignant neoplasm of female breast)</i>
	<i>C50.0 (malignant neoplasm of nipple and areola)</i>	174.0 (malignant neoplasm of nipple and areola, female breast)
	C50.01 (malignant neoplasm of nipple and areola, female...)	
	- C50.011 (<i>right</i> female breast)	
	- C50.012 (<i>left</i> female breast)	
	- C50.019 (<i>unspecified</i> female breast)	
	<i>C50.1 (malignant neoplasm of central portion of breast, female)</i>	174.1 (malignant neoplasm of central portion of female breast)
	C50.11 (malignant neoplasm of central portion of breast, female...)	
	- C50.111 (<i>right</i> female breast)	
	- C50.112 (<i>left</i> female breast)	
	- C50.119 (<i>unspecified</i> female breast)	
	<i>C50.2 (malignant neoplasm of upper-inner quadrant of breast)</i>	174.2 (malignant neoplasm of upper-inner quadrant)
	C50.21 (malignant neoplasm of upper-inner quadrant of breast, female...)	
	- C50.211 (<i>right</i> female breast)	



- C50.212 (<i>left female breast</i>)	
- C50.219 (<i>unspecified female breast</i>)	
C50.3 (<i>malignant neoplasm of lower-inner quadrant of breast</i>)	174.3 (malignant neoplasm of lower-inner quadrant)
C50.31 (malignant neoplasm of lower-inner quadrant of breast, female...)	
- C50.311 (<i>right female breast</i>)	
- C50.312 (<i>left female breast</i>)	
- C50.319 (<i>unspecified female breast</i>)	
C50.4 (<i>malignant neoplasm of upper-outer quadrant of breast</i>)	174.4 (malignant neoplasm of upper-outer quadrant)
C50.41 (malignant neoplasm of upper-outer quadrant of breast, female...)	
- C50.411 (<i>right female breast</i>)	
- C50.412 (<i>left female breast</i>)	
- C50.419 (<i>unspecified female breast</i>)	
C50.5 (<i>malignant neoplasm of lower-outer quadrant breast</i>)	174.5 (malignant neoplasm of lower-outer quadrant)
C50.51 (malignant neoplasm of lower-outer quadrant breast, female...)	
- C50.511 (<i>right female breast</i>)	
- C50.512 (<i>left female breast</i>)	
- C50.519 (<i>unspecified female breast</i>)	
C50.6 (<i>malignant neoplasm of axillary tail of breast</i>)	174.6 (malignant neoplasm of axillary tail)
C50.61 (malignant neoplasm of axillary tail of breast, female...)	
- C50.611 (<i>right female breast</i>)	
- C50.612 (<i>left female breast</i>)	
- C50.619 (<i>unspecified female breast</i>)	
C50.8 (<i>malignant neoplasm of overlapping sites of breast</i>)	174.8 (malignant neoplasm of other specified sites of female breast)
C50.81 (malignant neoplasm of overlapping sites of breast, female...)	
- C50.811 (<i>right female breast</i>)	
- C50.812 (<i>left female breast</i>)	
- C50.819 (<i>unspecified female breast</i>)	

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	C50.9 (malignant neoplasm of breast of unspecified site)	174.9 (malignant neoplasm of breast, female, unspecified)
	C50.91 (malignant neoplasm of breast of unspecified site, female...)	
	- C50.911 (right female breast)	
	- C50.912 (left female breast)	
	- C50.919 (unspecified female breast)	

Procedures	ICD-10-CM Codes	ICD-9-CM Codes
Related treatment procedures	Z51.0 (encounter for antineoplastic radiation therapy)	V58.0 (radiotherapy)
(Radiotherapy, chemotherapy, immunotherapy)	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 September of 2015 the case definition was updated to include ICD10 codes.
- This case definition was developed in 2010 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. The case definition was developed based on reviews of the ICD9 codes, the scientific literature and previous AFHSC analyses.
- This case definition was developed for a report on ten different invasive cancers. The same case finding criteria are used for all types of cancer in the report. This broad application of a single case definition may affect the sensitivity and specificity in varying ways for the individual cancers. Furthermore, surgical treatment procedures such as hysterectomy, mastectomy, prostatectomy, and other procedures unique to certain types of cancer are not included in the code sets for individual cancers.

Case Definition and Incidence Rule Rationale

- Case finding criteria for this definition requires one hospitalization record with a case defining ICD9 or ICD10 code for breast cancer in the *first* diagnostic position *unless* a code for a related treatment procedure is in the *first* diagnostic position; then the case defining ICD9 or ICD10 code for breast cancer is allowed in the *second* diagnostic position.
- The case finding criterion 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. For outpatient encounters, the incident date is considered the first of the three encounters occurring within the 90-



day period, (e.g., if a woman has four breast 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). Exploratory analysis of the Defense Medical Surveillance System (DMSS) data revealed that this criterion yielded optimal specificity.³ The period of 90 days was established to allow for the likelihood that “true” cases of breast cancer would have second and third encounters within that interval.

- For the purposes of counting new incident cases, AFHSD uses a *once per lifetime* incidence rule unless a specific timeframe is more appropriate and is specified, (e.g., individuals may be counted as an incident case once every 365 days). Historically, a *once per surveillance period* incidence rule was used due to limited data in the Defense Medical Surveillance System (DMSS), but that is no longer necessary.

Code Set Determination and Rationale

- This case definition is designed to capture cases of *invasive* female breast cancer only. Codes ICD9 233.0 (carcinoma in situ of breast and genitourinary system) / ICD10 D05.90 (unspecified type of carcinoma in situ of unspecified breast) which includes ductal carcinoma in situ (DCIS) and lobular carcinoma in situ (LCIS) are not included in the code set. Carcinoma in situ represents approximately 20% of new breast cancer cases and has different prognoses and treatments than invasive breast cancer.² Because DCIS and LCIS can progress to invasive cancer, women with these diagnoses should be carefully monitored for progression.²

Reports

The AFHSD reports on female breast cancer in the following reports:

- Periodic *Medical Surveillance Monthly Report (MSMR)* articles on cancers and cancer-related deaths.

Review

Nov 2022	Case definition reviewed and updated by the AFHSD Surveillance Methods and Standards (SMS) working group.
Aug 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.
Dec 2012	Case definition reviewed and adopted by the AFHSC SMS working group.
Jun 2012	Case definition developed by the Armed Forces Health Surveillance Center (AFHSC), ASDHA, USAPHC and the United States Military Cancer Institute.

Comments

None

³ Detailed information on this analysis is available through AFHSD *Medical Surveillance Monthly Report (MSMR)* staff; reference DMSS Requests #R080127, #R080159, #R090184, #R090302, #R090341, #R100181, and #R100303 (DoD Cancer Incidence), 2008-2009.

