



Male Breast Cancer Treatment (PDQ®)–Health Professional Version

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General Information About Male Breast Cancer

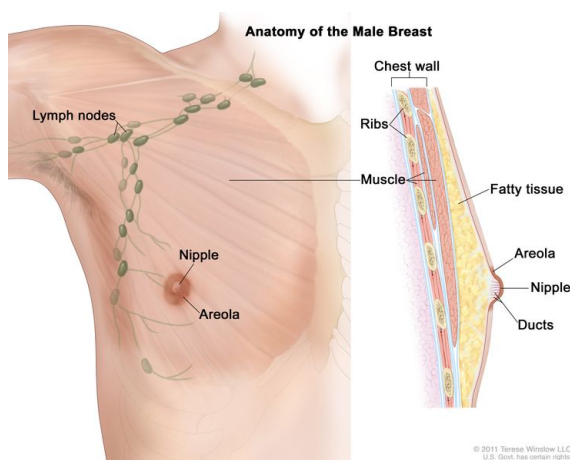
Incidence and Mortality

Estimated new cases and deaths from breast cancer (men only) in the United States in 2021:[1]

- New cases: 2,650.
- Deaths: 530.

Male breast cancer is rare.[2] Fewer than 1% of all breast carcinomas occur in men.[3,4] The mean age at diagnosis is between 60 and 70 years; however, males of all ages can be affected with the disease.

Anatomy



Anatomy of the male breast. The nipple and areola are shown on the outside of the breast. The lymph nodes, fatty tissue, ducts, and other parts of the inside of the breast are also shown.

Risk Factors

Predisposing risk factors for male breast cancer appear to include the following:[5,6]

- Radiation exposure to breast/chest.
- Estrogen use.
- Diseases associated with hyperestrogenism, such as cirrhosis or Klinefelter syndrome.

- Family health history: Definite familial tendencies are evident, with an increased incidence seen in men who have a number of female relatives with breast cancer.
- Major inheritance susceptibility: An increased risk of male breast cancer has been reported in families with *BRCA* mutations, although the risks appear to be higher with inherited *BRCA2* than with *BRCA1* mutations.[7,8] Genes other than *BRCA* may also be involved in predisposition to male breast cancer, including mutations in the *PTEN* tumor suppressor gene, *TP53* mutations (Li-Fraumeni syndrome), *PALB2* mutations, and mismatch repair mutations associated with hereditary nonpolyposis colorectal cancer (Lynch syndrome).[9-11] (Refer to the [High-Penetrance Breast and/or Gynecologic Cancer Susceptibility Genes](#) and [Management of Male Carriers of *BRCA* Pathogenic Variants](#) sections in the PDQ summary on [Genetics of Breast and Gynecologic Cancers](#) for more information.)

Clinical Features

Signs of breast cancer in men may include the following:

- A lump or thickening in or near the breast or in the underarm area.
- A change in the size or shape of the breast.
- A dimple or puckering in the skin of the breast.
- An inverted nipple.
- Fluid from the nipple, especially if it is bloody.
- Scaly, red, or swollen skin on the breast, nipple, or areola.
- Peau d'orange.

Diagnostic Evaluation

When breast cancer is suspected, patient management generally includes the following:

- Confirmation of the diagnosis.
- Evaluation of the stage of disease.
- Selection of therapy.

The following tests and procedures are used to diagnose breast cancer:

- Clinical breast examination.
- Mammography.
- Ultrasonography.
- Breast magnetic resonance imaging, if clinically indicated.
- Biopsy, including estrogen-receptor and progesterone-receptor status and *HER2/neu* gene amplification of the biopsy sample.[12]

(Refer to the [Diagnosis](#) section in the PDQ summary on [Breast Cancer Treatment \[Adult\]](#) for information about evaluating the contralateral breast and molecular profiling [estrogen-receptor and progesterone-receptor status and human epidermal growth factor receptor 2 (HER2/neu) expression status of the tumor].)

Histopathologic Classification

The pathology of male breast cancer is similar to that of female breast cancer, and infiltrating ductal cancer is the most common tumor type (refer to [Table 1](#)).[13] Intraductal cancer, inflammatory carcinoma, and Paget

disease of the nipple have also been seen in men, but lobular carcinoma *in situ* has not.[13]

Lymph node involvement and the hematogenous pattern of spread are similar to what is observed in female breast cancer.

Table 1. Tumor Location and Related Histologic Subtypes for Male Breast Cancer

Tumor Location	Histologic Subtype
Carcinoma, NOS	
Ductal	Intraductal (<i>in situ</i>)
	Invasive with predominant component
	Invasive, NOS
	Comedo
	Inflammatory
	Medullary with lymphocytic infiltrate
	Mucinous (colloid)
	Papillary
	Scirrhus
	Tubular
	Other
Lobular	Invasive [14]

NOS = not otherwise specified.

Tumor Location	Histologic Subtype
Nipple	Paget disease, NOS
	Paget disease with intraductal carcinoma
	Paget disease with invasive ductal carcinoma
Other	Undifferentiated carcinoma
	Metaplastic
NOS = not otherwise specified.	

Prognosis and Predictive Factors

Factors that correlate well with prognosis include the following:[5,15]

- Size of the lesion.
- Presence or absence of lymph node involvement.

Overall survival is similar to that of women with breast cancer. The impression that male breast cancer has a worse prognosis may stem from the tendency toward diagnosis at a later stage.[2,5,16]

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Stage Information for Male Breast Cancer

The AJCC staging system provides a strategy for grouping patients with a similar prognosis. The stage of the disease is determined by the following:

- Tumor size.
- Lymph node status.
- Estrogen-receptor and progesterone-receptor levels in the tumor tissue.
- Human epidermal growth factor receptor 2 (HER2/neu) status in the tumor.
- Tumor grade.

Treatment decisions are based on the stage of disease and the general health of the patient.

The TNM (tumor, node, metastasis) staging system for male breast cancer is identical to the staging system for female breast cancer. (Refer to [TNM Definitions](#) in the [Stage Information for Breast Cancer](#) section in the PDQ summary on [Breast Cancer Treatment \[Adult\]](#) for more information.)

Treatment Option Overview for Male Breast Cancer

Standard treatment options for men with breast cancer are described in Table 2.

Table 2. Standard Treatment Options for Male Breast Cancer

Stage (TNM Definitions)	Standard Treatment Options
Early/localized/operable breast cancer	Surgery with or without radiation therapy
	Adjuvant therapy—chemotherapy, endocrine therapy, HER2-directed therapy
Locoregional recurrent breast cancer	Surgery
	Radiation therapy and chemotherapy
Metastatic breast cancer	Hormone therapy and/or chemotherapy
<p>T = primary tumor; N = regional lymph node; M = distant metastasis; HER2 = human epidermal growth factor receptor 2.</p>	

Treatment Options for Male Breast Cancer

The approach to the treatment of breast cancer in men is similar to that in women. Because male breast cancer is rare, there is a lack of randomized data to support specific treatment modalities.

Treatment of Early/Localized/Operable Male Breast Cancer

As in women, standard treatment options for men with early-stage breast cancer include the following:

- [Surgery with or without radiation therapy](#) (locoregional therapy).
- [Adjuvant therapy](#) (systemic therapy).
 - Chemotherapy.
 - Endocrine therapy.
 - Human epidermal growth factor receptor 2 (HER2)–directed therapy.

Surgery with or without radiation therapy

Primary standard treatment is a modified radical mastectomy with axillary dissection.[1-3] Responses are generally similar to those seen in women with breast cancer.[2] Breast conservation surgery with lumpectomy and radiation therapy has also been used, and results have been similar to those seen in women with breast cancer.[4]

(Refer to [Surgery](#) in the [Early/Localized/Operable Breast Cancer](#) section in the PDQ summary on [Breast Cancer Treatment \[Adult\]](#) for more information.)

Adjuvant therapy

In men, no controlled studies have compared adjuvant treatment options. Adjuvant therapies used to treat early/localized/operable male breast cancer are outlined in Table 3.

Table 3. Adjuvant Therapy Used to Treat Early/Localized/Operable Male Breast Cancer

Type of Adjuvant Therapy	Agents Used
Chemotherapy	Cyclophosphamide plus methotrexate and fluorouracil (CMF) [5]
	Cyclophosphamide plus doxorubicin and fluorouracil (CAF)
	Doxorubicin plus cyclophosphamide with or without paclitaxel (AC, AC-T)
Endocrine therapy	Tamoxifen [6]
	Aromatase inhibitors with LHRH agonist [6-10]
HER2-directed therapy	Trastuzumab [1,6]
	Pertuzumab
HER2 = human epidermal growth factor receptor 2; LHRH = luteinizing hormone-releasing hormone.	

In men with node-negative tumors, adjuvant therapy should be considered on the same basis as for women with breast cancer because there is no evidence that response to therapy is different between men and women.[11]

In men with node-positive tumors, both chemotherapy plus tamoxifen and other hormonal therapy have been used and are believed to increase survival to the same extent as in women with breast cancer.

Approximately 85% of all male breast cancers are estrogen receptor-positive, and 70% of them are progesterone receptor-positive.[2,12] Response to hormone therapy correlates with the presence of these receptors. Hormonal therapy has been recommended in all patients with receptor-positive cancers.[1,2] Tamoxifen use, however, is associated with a high rate of treatment-limiting symptoms, such as hot flashes and impotence, in male breast cancer patients.[13] Responses are generally similar to those seen in women with breast cancer.[2] (Refer to [Postoperative Systemic Therapy](#) and [Preoperative Systemic Therapy](#) in the

[Early/Localized/Operable Breast Cancer](#) section in the PDQ summary on [Breast Cancer Treatment \[Adult\]](#) for more information.)

Regarding endocrine therapy, tamoxifen is generally used instead of an aromatase inhibitor (AI) because the data supporting the use of an AI in men with breast cancer are limited. A retrospective analysis of 257 men with stage I to stage III breast cancer included 50 men treated with an AI and 207 men treated with tamoxifen. The following results were observed:

- With a median follow-up of 42 months, treatment with an AI was associated with a higher risk of death compared with tamoxifen (32% with AI vs. 18% with tamoxifen; hazard ratio, 1.55; 95% confidence interval, 1.13–2.13).[14]
- These findings suggest that instead of an AI, tamoxifen should be used as adjuvant endocrine therapy for men with breast cancer.

The use of AI therapy with a luteinizing hormone-releasing hormone agonist has been reported in several cases in the literature.[7] The German Breast Group is conducting a randomized phase II clinical trial ([NCT01638247](#)) of tamoxifen with or without gonadotropin-releasing hormone (GnRH) analogue versus AI plus GnRH analogue in men with early-stage, hormone receptor–positive breast cancer; results are pending.

Treatment of Locoregional Recurrent Male Breast Cancer

Standard treatment options for men with locoregional recurrent breast cancer include the following:[2]

- Surgical excision.
- Radiation therapy combined with chemotherapy.

Responses are generally similar to those seen in women with breast cancer.[2,11]

(Refer to the [Locoregional Recurrent Breast Cancer](#) section in the PDQ summary on [Breast Cancer Treatment \[Adult\]](#) for more information.)

Treatment of Metastatic Male Breast Cancer

Standard treatment options for men with metastatic breast cancer include the following:

- Hormone therapy and/or chemotherapy.

Hormonal therapy is used as the initial treatment. Responses are generally similar to those seen in women with breast cancer.[2,11]

(Refer to the [Metastatic Breast Cancer](#) section in the PDQ summary on [Breast Cancer Treatment \[Adult\]](#) for more information.)

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Changes to This Summary (01/29/2021)

The PDQ cancer information summaries are reviewed regularly and updated as new information becomes available. This section describes the latest changes made to this summary as of the date above.

General Information About Male Breast Cancer

Updated [statistics](#) with estimated new cases and deaths for 2021 (cited American Cancer Society as reference 1).

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About This PDQ Summary

Purpose of This Summary

This PDQ cancer information summary for health professionals provides comprehensive, peer-reviewed, evidence-based information about the treatment of male breast cancer. It is intended as a resource to inform and assist clinicians in the care of their patients. It does not provide formal guidelines or recommendations for making health care decisions.

Reviewers and Updates

This summary is reviewed regularly and updated as necessary by the [PDQ Adult Treatment Editorial Board](#), which is editorially independent of the National Cancer Institute (NCI). The summary reflects an independent review of the literature and does not represent a policy statement of NCI or the National Institutes of Health (NIH).

Board members review recently published articles each month to determine whether an article should:

- be discussed at a meeting,
- be cited with text, or
- replace or update an existing article that is already cited.

Changes to the summaries are made through a consensus process in which Board members evaluate the strength of the evidence in the published articles and determine how the article should be included in the summary.

The lead reviewers for Male Breast Cancer Treatment are:

- Joseph L. Pater, MD (NCIC-Clinical Trials Group)
- Karen L. Smith, MD, MPH (Johns Hopkins University at Sibley Memorial Hospital)

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