

Inflammatory Breast Cancer

Key Points

- Inflammatory breast cancer is a rare and very aggressive disease with symptoms that include redness, swelling, tenderness, and warmth in the breast.
- Treatment for inflammatory breast cancer is usually more aggressive than treatment for most other types of breast cancer.
- People with inflammatory breast cancer are encouraged to enroll in clinical trials that are testing new treatments.

1. What is inflammatory breast cancer?

Inflammatory breast cancer is a rare and very aggressive disease in which cancer cells block lymph vessels in the skin of the breast. This type of breast cancer is called “inflammatory” because the breast often looks swollen and red, or “inflamed.”

Inflammatory breast cancer accounts for 1 to 5 percent of all breast cancers diagnosed in the United States. Most inflammatory breast cancers are invasive ductal carcinomas, which means they developed from cells that line the milk ducts of the breast and then spread beyond the ducts.

Inflammatory breast cancer progresses rapidly, often in a matter of weeks or months. Inflammatory breast cancer is either stage III or IV at diagnosis, depending on whether cancer cells have spread only to nearby lymph nodes or to other tissues as well.

Additional features of inflammatory breast cancer include the following:

- Compared with other types of breast cancer, inflammatory breast cancer tends to be diagnosed at younger ages (median age of 57 years, compared with a median age of 62 years for other types of breast cancer).
- It is more common and diagnosed at younger ages in African American women than in white women. The median age at diagnosis in African American women is 54 years, compared with a median age of 58 years in white women.
- Inflammatory breast tumors are frequently hormone receptor negative, which means that hormone therapies, such as tamoxifen, that interfere with the growth of cancer cells fueled by estrogen may not be effective against these tumors.
- Inflammatory breast cancer is more common in obese women than in women of normal weight.

Like other types of breast cancer, inflammatory breast cancer can occur in men, but usually at an older age (median age at diagnosis of 66.5 years) than in women.

2. What are the symptoms of inflammatory breast cancer?

Symptoms of inflammatory breast cancer include swelling (edema) and redness (erythema) that affect a third or more of the breast. The skin of the breast may also appear pink, reddish purple, or bruised. In addition, the skin may have ridges or appear pitted, like the skin of an orange (called *peau d'orange*). These symptoms are caused by the buildup of fluid (lymph) in the skin of the breast. This fluid buildup occurs because cancer cells have blocked lymph vessels in the skin, preventing the normal flow of lymph through the tissue. Sometimes, the breast may contain a solid tumor that can be felt during a physical exam, but, more often, a tumor cannot be felt.



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Other symptoms of inflammatory breast cancer include a rapid increase in breast size; sensations of heaviness, burning, or tenderness in the breast; or a nipple that is inverted (facing inward). Swollen lymph nodes may also be present under the arm, near the collarbone, or in both places.

It is important to note that these symptoms may also be signs of other diseases or conditions, such as an infection, injury, or another type of breast cancer that is locally advanced. For this reason, women with inflammatory breast cancer often have a delayed diagnosis of their disease.

3. How is inflammatory breast cancer diagnosed?

Inflammatory breast cancer can be difficult to diagnose. Often, there is no lump that can be felt during a physical exam or seen in a screening mammogram. In addition, most women diagnosed with inflammatory breast cancer have non-fatty (dense) breast tissue, which makes cancer detection in a screening mammogram more difficult. Also, because inflammatory breast cancer is so aggressive, it can arise between scheduled screening mammograms and progress quickly. The symptoms of inflammatory breast cancer may be mistaken for those of mastitis, which is an infection of the breast, or another form of locally advanced breast cancer.

To help prevent delays in diagnosis and in choosing the best course of treatment, an international panel of experts published guidelines on how doctors can diagnose and stage inflammatory breast cancer correctly. Their recommendations are summarized below.

Minimum criteria for a diagnosis of inflammatory breast cancer include the following:

- A rapid onset of erythema (redness), edema (swelling), and a peau d'orange appearance and/or abnormal breast warmth, with or without a lump that can be felt.
- The above-mentioned symptoms have been present for less than 6 months.
- The erythema covers at least a third of the breast.
- Initial biopsy samples from the affected breast show invasive carcinoma.

Further examination of tissue from the affected breast should include testing to see if the cancer cells have hormone receptors (estrogen and progesterone receptors) or a mutation that causes them to make greater than normal amounts of the HER2 protein (HER2-positive breast cancer).

Imaging and staging tests should include the following:

- A diagnostic mammogram and an ultrasound of the breast and regional (nearby) lymph nodes.
- A PET scan or a CT scan and a bone scan to see if the cancer has spread to other parts of the body.

Proper diagnosis and staging of cancer helps doctors develop the best treatment plan and estimate the likely outcome of the disease, including the chances for recurrence and survival.

4. How is inflammatory breast cancer treated?

Inflammatory breast cancer is treated first with systemic chemotherapy to help shrink the tumor, then with surgery to remove the tumor, followed by radiation therapy. This approach to treatment is called a multimodal approach. Studies have found that women with inflammatory breast cancer who are treated with a multimodal approach have better responses to therapy and longer survival. Treatments used in a multimodal approach may include those described below.

- **Neoadjuvant chemotherapy:** This type of chemotherapy is given before surgery and usually includes both anthracycline and taxane drugs. At least six cycles of neoadjuvant chemotherapy given over the course of 4 to 6 months before attempting to remove the tumor has been recommended, unless the disease continues to progress during this time and doctors decide that surgery should not be delayed.
- **Targeted therapy:** This type of treatment may be used if a woman's biopsy samples show that her cancer cells have a tumor marker that can be targeted with specific drugs. For example, inflammatory breast cancers often produce greater than normal amounts of the HER2 protein, which means they may respond positively to drugs, such as trastuzumab (Herceptin), that target this protein. Anti-HER2 therapy can be given as part of neoadjuvant therapy and after surgery (adjuvant therapy). Studies have shown that

women with inflammatory breast cancer who received trastuzumab in addition to chemotherapy have better responses to treatment and better survival.

- **Hormone therapy:** If a woman's biopsy samples show that her cancer cells contain hormone receptors, hormone therapy is another treatment option. For example, breast cancer cells that have estrogen receptors depend on the female hormone estrogen to promote their growth. Drugs such as tamoxifen, which prevent estrogen from binding to its receptor, and aromatase inhibitors such as letrozole, which block the body's ability to make estrogen, can cause estrogen-dependent cancer cells to stop growing and die.
- **Surgery:** The standard surgery for inflammatory breast cancer is a modified radical mastectomy. This surgery involves removal of the entire affected breast and most or all of the lymph nodes under the adjacent arm. Often, the lining over the underlying chest muscles is also removed, but the chest muscles are preserved. Sometimes, however, the smaller chest muscle (pectoralis minor) may be removed, too.
- **Radiation therapy:** Post-mastectomy radiation therapy to the chest wall under the breast that was removed is a standard part of multimodal therapy for inflammatory breast cancer. If a woman received trastuzumab before surgery, she may continue to receive it during postoperative radiation therapy. If breast reconstruction is planned, the sequencing of the radiation therapy and reconstructive surgery may be influenced by the method of breast reconstruction used. If a breast implant is to be used, the preferred approach is to delay radiation therapy until after the reconstructive surgery. If a woman's own tissues are going to be used in breast reconstruction, it is preferable to delay reconstructive surgery until after the radiation therapy has been completed.
- **Adjuvant therapy:** Adjuvant systemic therapy may be given after surgery to reduce the chance of cancer recurrence. This therapy may include additional chemotherapy, antihormonal therapy, targeted therapy (such as trastuzumab), or some combination of these treatments.
- **Supportive/palliative care:** The goal of supportive/palliative care is to improve the quality of life of patients who have a serious or life-threatening disease, such as cancer, and to provide support to their loved ones.

5. **What is the prognosis of patients with inflammatory breast cancer?**

The prognosis, or likely outcome, for a patient diagnosed with cancer is often viewed as the chance that the cancer will be treated successfully and that the patient will recover completely. Many factors can influence a cancer patient's prognosis, including the type and location of the cancer, the stage of the disease, the patient's age and overall general health, and the extent to which the patient's disease responds to treatment.

Because inflammatory breast cancer usually develops quickly and spreads aggressively to other parts of the body, women diagnosed with this disease, in general, do not survive as long as women diagnosed with other types of breast cancer. According to statistics from NCI's Surveillance, Epidemiology, and End Results (SEER) program, the 5-year relative survival for women diagnosed with inflammatory breast cancer during the period from 1988 through 2001 was 34 percent, compared with a 5-year relative survival of up to 87 percent among women diagnosed with other stages of invasive breast cancers.

It is important to keep in mind, however, that these survival statistics are based on large numbers of patients and that an individual woman's prognosis could be better or worse, depending on her tumor characteristics and medical history. Women who have inflammatory breast cancer are encouraged to talk with their doctor about their prognosis, given their particular situation.

Research has shown that the following factors are associated with a better prognosis for women with inflammatory breast cancer:

- **Stage of disease:** Women with stage III disease have a better prognosis than women with stage IV disease. Among women who have stage III inflammatory breast cancer, about 40 percent survive at least 5 years after their diagnosis, whereas among women with stage IV inflammatory breast cancer, only about 11 percent survive for at least 5 years after their diagnosis.
- **Tumor grade:** Women with grade I or grade II tumors have a better prognosis than those with grade III tumors. Tumor grade is a term that describes what cancer cells look like under a microscope, with a

higher grade indicating a more abnormal appearance and a more aggressive cancer that is likely to grow and spread. Among women who are diagnosed with grade I or grade II inflammatory breast cancer, 77 percent survived at least 2 years after their diagnosis, whereas among women who were diagnosed with grade III inflammatory breast cancer, 65 percent survived at least 2 years after their diagnosis.

- **Ethnicity:** African American women who have inflammatory breast cancer generally have a worse prognosis than women of other racial and ethnic groups. Studies have found that around 53 percent of African American women who are diagnosed with inflammatory breast cancer survive at least 2 years after diagnosis, whereas 69 percent of women from other racial and ethnic groups survive at least 2 years after diagnosis.
- **Estrogen receptor status:** Women with inflammatory breast whose cancer cells have estrogen receptors have a better prognosis than those whose cancer cells are estrogen receptor negative. The median survival for women with estrogen-receptor negative inflammatory breast cancer is 2 years, whereas the median survival for those with estrogen receptor-positive inflammatory breast cancer is 4 years.
- **Type of treatment:** Multimodal treatment of inflammatory breast cancer improves a woman's prognosis. Historically, among women who had only surgery, radiotherapy, or surgery and radiotherapy, fewer than 5 percent survived longer than 5 years. However, when women are treated with neoadjuvant chemotherapy, mastectomy, adjuvant chemotherapy, and radiation therapy, their 5-year disease-free survival ranges from 24 to 49 percent. One long-term study found that 28 percent of women with inflammatory breast cancer survived 15 years or longer after they were treated with multimodal therapy.

Ongoing research, especially at the molecular level, will increase our understanding of how inflammatory breast cancer begins and progresses. This knowledge should enable the development of new treatments and more accurate prognoses for women diagnosed with this disease. It is important, therefore, that women who are diagnosed with inflammatory breast cancer talk with their doctor about the option of participating in a clinical trial.

7. What clinical trials are available for women with inflammatory breast cancer?

NCI sponsors clinical trials of new treatments for all types of cancer, as well as trials that test better ways to use existing treatments. Participation in clinical trials is an option for many patients with inflammatory breast cancer, and all patients with this disease are encouraged to consider treatment in a clinical trial.

Information about current clinical trials for inflammatory breast cancer can be found by visiting NCI's list of clinical trials (<http://www.cancer.gov/clinicaltrials/search>) and selecting "breast cancer, female" as the cancer type/condition and "inflammatory breast cancer" as the stage/subtype. For information about how to search the list, see "Help Using the NCI Clinical Trials Search Form" (<http://www.cancer.gov/clinicaltrials/search-form-help>) or call NCI's Cancer Information Service at 1-800-4-CANCER.

People interested in taking part in a clinical trial should talk with their doctor. More information about clinical trials is available in the NCI booklet *Taking Part in Cancer Treatment Research Studies* (<http://www.cancer.gov/clinicaltrials/learningabout/Taking-Part-in-Cancer-Treatment-Research-Studies>) and on the Clinical Trials Home Page at <http://www.cancer.gov/clinicaltrials>.

Selected References

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Related Resources

- *Cancer Clinical Trials*
(<http://www.cancer.gov/cancertopics/factsheet/Information/clinical-trials>)
- *Cancer Staging*
(<http://www.cancer.gov/cancertopics/factsheet/Detection/staging>)
- *Chemotherapy and You: Support for People With Cancer*
(<http://www.cancer.gov/cancertopics/coping/chemotherapy-and-you>)
- *Hormone Therapy for Breast Cancer*
(<http://www.cancer.gov/cancertopics/factsheet/Therapy/hormone-therapy-breast>)
- *Radiation Therapy for Cancer*
(<http://www.cancer.gov/cancertopics/factsheet/Therapy/radiation>)
- *Taking Part in Cancer Treatment Research Studies*
(<http://www.cancer.gov/clinicaltrials/learningabout/Taking-Part-in-Cancer-Treatment-Research-Studies>)

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