

Possible Side Effects

OF RADIATION FOR BREAST CANCER

Side effects are usually temporary and typically go away shortly after treatment ends. Below is a list of possible side effects you might notice during your treatment.

- **Skin irritation** similar to a sunburn, sometimes with a peeling reaction toward the end of treatment.
- **Breast swelling** can be mild to moderate.
- **Mild tenderness** in the breast or chest wall. This will slowly get better over time.
- **Mild fatigue** that generally gets better a month or two after treatment ends.

Many of these side effects can be controlled with medications. Tell your doctor or nurse if you experience any discomfort so they can help you feel better.

After the short-term side effects of radiation therapy resolve, others may become noticeable months or years later.

- **Breast firmness** or mild shrinkage.
- **Change in skin color and thickness**, sometimes fine blood vessels will appear.
- **Scarring** of a small part of the lung just under the breast. Generally, no side effects are noticed but rarely radiation may cause a dry cough or shortness of breath that is treatable.
- **Mild decreased range of motion** and/or shoulder discomfort.
- **Hand or arm swelling**, called lymphedema, can occur but depends upon the extent of surgery and radiation.

Very rare potential side effects include heart injury for left-sided breast cancers and new tumors caused by radiation. Many factors affect your risk for these side effects. Please talk to your radiation oncologist to learn more about how likely these side effects may be for you.

Visit
www.rtanswers.org
to download a complete
chart of side effects.

Side effects of Breast Cancer Treatment		
Organ System	Acute Complications (Days-Months After Treatment)	Late Complications (Months-Years After Treatment)
Fatigue	Acute fatigue (common)	Chronic fatigue (uncommon)
Skin	• Irritation • Redness • Itchy/peeling skin or blisters	• Tissue scarring, discoloration, thickening or bruising
Breast	• Swelling • Tenderness • Pain	• Decrease in size • Firmness • Tenderness • Pain
Chest	• Tightening of axillae	• Scarring and tissue scarring or thickening
Arm	• Discomfort	• Weakness, not of bony structure
Lungs	• Inflammation • Shortness of breath • Cough	• Scarring • Dryness of breath • Cough
Heart	• Pericarditis (inflammation of the heart sac) (rare)	• Weakening of heart muscle (rare) • Heart dysfunction (rare) • Heart attack (rare)
Arm	• Lymphedema (arm swelling) (rare)	• Lymphedema (arm swelling) • Shoulder discomfort • Nerve dysfunction (rare)
Neck	• Hoarseness • Difficulty swallowing (uncommon)	• Radiation-induced cancer of the skin, breast, underlying muscle/bone (rare)
Radiation	• Cancers (not related to radiation) in other systems (rare)	

HELPFUL WEBSITES ON BREAST CANCER

Living Beyond Breast Cancer

www.lbbc.org

Cancer.Net

www.cancer.net

Susan G. Komen for the Cure

www.komen.org

LEARNING ABOUT CLINICAL TRIALS

The radiation oncology team is always exploring new ways to improve treatment for cancer patients through studies called clinical trials. Today's radiation treatments are the result of clinical trials completed years ago proving that radiation therapy kills cancer cells and is safe long-term. For more information on clinical trials, please visit:

National Cancer Institute

www.cancer.gov/clinicaltrials

Radiation Therapy Answers

www.rtanswers.org

Radiation Therapy Oncology Group

www.rtog.org



ABOUT THE RADIATION ONCOLOGY TEAM

Radiation oncologists are cancer doctors who also oversee the care of each patient undergoing radiation treatment. Other members of the radiation oncology team include radiation therapists, radiation oncology nurses, medical physicists, dosimetrists, social workers and nutritionists. To locate a radiation oncologist in your area, visit www.rtanswers.org.

ABOUT ASTRO

The American Society for Radiation Oncology is the premier radiation oncology society in the world with more than 10,000 members who specialize in treating cancer with radiation therapy. ASTRO's mission is to advance the practice of radiation oncology by promoting excellence in patient care, promoting research and disseminating research results. Visit www.astro.org for more information.

Radiation Therapy for Breast Cancer



Breast cancer is the most common type of cancer in American women, according to the American Cancer Society. This year, 232,340 women and 2,240 men will learn they have breast cancer. Another 64,640 women will learn they have noninvasive (also called in situ) breast cancer. Breast cancer can often be cured. About 80 percent of all patients with breast cancer live at least 10 years after their diagnosis.

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TREATING BREAST CANCER

If you find out you have breast cancer, you should discuss your treatment options with your physician. Breast cancer treatment will vary depending on the stage and location of the cancer.

Breast cancer treatment options include:

Surgery is the main treatment for breast cancer. This is often followed by radiation therapy to decrease the risk of cancer returning in the breast, chest wall and/or lymph nodes.

Lumpectomy, or partial mastectomy, is the surgical removal of the cancerous tissue along with a small rim of surrounding healthy breast tissue. This type of breast conserving surgery is often followed by radiation therapy.

Mastectomy is the surgical removal of the entire breast. Sometimes, breast reconstruction can be performed after the mastectomy. While less common, radiation is sometimes recommended after mastectomy as well.

A select number of lymph nodes near the breast may be removed during surgery to determine if they contain tumor cells. If one or more of the lymph nodes contain tumor cells, the removal of additional lymph nodes may be recommended. An examination of the lymph nodes is typically performed with lumpectomy or mastectomy.

Both mastectomy and breast conserving therapy (surgery and radiation) can be equally effective approaches in curing breast cancer. Ask your surgeon and radiation oncologist about the risks and benefits of both options.

Radiation Therapy after surgery can decrease the chance of cancer returning in the breast and improve survival. Radiation therapy involves delivering focused radiation to the breast or chest wall, and sometimes the lymph nodes, to treat cancer cells not detected or removed by surgery. Radiation therapy kills cancer cells by destroying their ability to multiply.

Medical Therapy is often recommended to improve cure rates or prevent a new breast cancer from developing. A medical oncologist will evaluate you and determine what medications may be most helpful in accomplishing those goals.

Chemotherapy has the ability to destroy cancer cells. Often, two or three different types of drugs may be combined to get the best outcome. While the dose and schedule for treatment varies, chemotherapy is usually delivered every two to three weeks over a few month period.

Hormonal therapy can block the effects of the female hormone, estrogen, in the body. Estrogen has been shown in some cases to cause your tumor to grow. Usually taken as a daily pill, hormonal therapy may be started during or after radiation therapy is completed.

Immunotherapy works by either stimulating your immune system to attack cancer cells or providing your immune system with what it needs, such as antibodies, to fight cancer.

Ask your medical oncologist what medications may be best for you.

WHOLE BREAST EXTERNAL BEAM RADIATION THERAPY AFTER LUMPECTOMY

After lumpectomy, the usual course of radiation treats the whole breast and, if needed, nearby lymph node areas. The radiation beam comes from a linear accelerator, or linac. The radiation beam is a specialized X-ray, and is painless. Each treatment is brief. Treatment is delivered every day, five days a week, Monday through Friday. The full course of treatment is usually delivered over three to seven weeks, depending on findings during surgery.

Before beginning treatment, you will be scheduled for a planning session to map out the area to treat. This procedure is called a simulation. Simulation involves having X-rays and/or a CT scan. Tiny tattoo-like marks made on your skin help the radiation therapist precisely position you for daily treatment.

Typically, radiation therapy is done with high energy X-rays, or photons. If needed, electrons may be used to treat the area where the lump was removed with a less penetrating, more focused beam.

Recent clinical trials suggest that whole breast radiation may be shortened by treating the tumor with higher daily doses over less time.

Additional research suggests women aged 70 or older with hormone receptor positive early-stage breast cancer benefit from radiation in terms of lowering their risk of getting cancer again in the treated breast but has not been shown to affect long term survival. Discuss with your radiation oncologist whether treatment with radiation is necessary.

ACCELERATED PARTIAL BREAST IRRADIATION AFTER LUMPECTOMY (APBI)

Ongoing research suggests that it may be safe to give radiation treatment to only the part of the breast that had the tumor, over a shorter period of time.

There are two approaches to APBI:

- Breast brachytherapy** involves placing flexible plastic tubes called catheters, or a balloon, directly into the cavity where the lump was taken out. A small, radioactive seed is guided into the catheters or balloon and is left in place for several minutes based on the treatment plan designed by your radiation oncologist. The procedure is repeated twice daily for a period of five days, then the catheters or balloon are removed and the treatment is finished.
- External beam radiation with 3-D CRT** is delivered in a similar way to standard whole breast radiation using a linear accelerator. However, it is more focused on the area around the surgery. Treatment occurs twice daily over a one week period.

The long-term results of these techniques appear promising but are still being studied. Talk with your radiation oncologist for more information.

CHEST WALL RADIATION THERAPY AFTER MASTECTOMY

After a mastectomy, your doctor may suggest radiation therapy for the chest wall and nearby lymph node areas. Whether or not radiation therapy should be used after removal of your breast depends on several factors such as the number of lymph nodes involved, tumor size and whether or not cancer cells were found near the edge of the surgical site. Women planning to undergo reconstruction should discuss the impact of post-mastectomy radiation with their surgeon and radiation oncologist.

CARING FOR YOURSELF DURING TREATMENT

- Get plenty of rest during treatment, and don't be afraid to ask for help.
- Follow your doctor's advice. Ask if you are unsure about anything.
- There are no stupid questions.
- Tell your doctor about any medications, vitamins or supplements you are taking to make sure they are safe to use during radiation therapy.
- Eat a balanced diet and drink plenty of fluids. If food tastes funny or if you're having trouble eating, tell your doctor, nurse or dietitian.
- Treat the skin exposed to radiation with special care. Stay out of the sun, avoid hot or cold packs, only use lotions and ointments after checking with your doctor or nurse and clean the area with warm water and mild soap.

Coping with the stress of a cancer diagnosis can be tough. It may help to seek out help from support groups and friends.

