

RADIATION THERAPY FOR LUNG CANCER



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AMERICAN SOCIETY FOR RADIATION ONCOLOGY

RADIATION THERAPY
FOR LUNG CANCER

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Lung cancer is the second most commonly diagnosed cancer in both men and women but the most common cause of cancer death. According to the American Cancer Society, approximately 238,000 Americans will be diagnosed with lung cancer annually. Cigarette smoking is the most common cause of lung cancer. However, exposure to asbestos, radon, environmental factors and secondhand smoke can cause lung cancer as well. Genetic factors can also affect risk for lung cancer.

TYPES OF LUNG CANCER

There are two main types of lung cancer: non-small cell lung cancer and small cell lung cancer. These names refer to how a cancer looks under the microscope. Non-small cell lung cancer is the most common type of lung cancer and accounts for 84% of cases.

There are different types of non-small cell lung cancer, including:

- Adenocarcinoma – a cancer that forms in the outer parts of the lung.
- Squamous cell carcinoma – a cancer that forms from a cell lining the airway.
- Large cell carcinoma – a kind of non-small cell lung cancer, but the cell it starts from may not be known.

Small cell lung cancer is less common and accounts for the remainder of cases. Although the cells are small, they multiply quickly and can form large tumors that may spread throughout the body. Small cell lung cancer is almost always due to smoking.

TREATING LUNG CANCER

Lung cancer treatment depends on several factors, including the type, the mutations specific to the cancer, the stage of the lung cancer and your overall health. Treatment of lung cancer often requires input from a multidisciplinary team, including radiation oncologists, medical oncologists, thoracic surgeons and lung doctors (pulmonologists).



Radiation Therapy

Radiation therapy is a noninvasive treatment that can be used to treat lung cancer. It can be combined with surgery, chemotherapy or both depending on the circumstances. Radiation therapy works within cancer cells by damaging their ability to multiply. When these cells die, the body naturally eliminates them. Different types of radiation may be used for lung cancer including X-rays or proton beam therapy.

In early-stage lung cancer, surgery has been the standard treatment. However, in patients unable to tolerate surgery, focused radiation, called stereotactic body radiation therapy (SBRT) or stereotactic ablative radiotherapy (SABR), is a good treatment option. For large tumors or those involving lymph nodes, radiation (often combined with chemotherapy) may replace surgery as the main treatment. For more advanced cancers, your doctors may recommend radiation to manage symptoms such as cough, shortness of breath, pain or bleeding.

Medical Therapy

Medical oncologists specialize in treating lung cancer using various drugs that target cancer cells throughout the body. Chemotherapy is a cancer treatment that uses drugs to destroy cancer cells and prevent tumor growth. There are additional different kinds of medications that can be used to treat lung cancer. New research is helping oncologists learn which drugs may be most effective, and the side effects for each one.

Often, chemotherapy is combined with radiation therapy to make the radiation more effective. However, such combined treatment (chemoradiation) can also increase the side effects of treatment. Chemotherapy may be recommended before or after surgery.

Other types of medications including targeted therapy or immunotherapy may be a part of your treatment. Targeted therapy are drugs that work on specific types of cancer cells. Immunotherapy are drugs that harness the body's immune system. These different treatments have their own side effects. These therapies may be given before, during or after radiation treatment. Ask your medical oncologist about what drugs may be best for you.

Surgery

Surgery is often a key part of lung cancer care. Even before treatment, surgery may be helpful in diagnosis and investigating whether the cancer has spread to lymph nodes in the chest. This type of surgery is part of tumor staging or understanding how advanced the cancer may be. In early-stage tumors, surgery by itself can be curative. Your surgeon may remove part of the lung or the entire lung around the cancer. The amount of lung removed will vary based upon the tumor's location, your health and other factors. If there are no signs of spread, additional treatment is often not needed. In more advanced tumors, surgery is sometimes replaced by radiation and chemotherapy or can be combined with these treatments. Ask your surgeon or other doctors whether your tumor is early or advanced and whether surgery will be helpful for you.

EXTERNAL BEAM RADIATION THERAPY

External beam radiation therapy (also called radiotherapy) is the safe delivery of high-energy X-rays or protons to your cancer. A linear accelerator focuses the radiation beam to a precise location in your body for an exact period of time. Radiation is given in a series of daily treatments, Monday through Friday, for several weeks. In small cell lung cancer, two treatments may be given each day. The full course of treatment varies and can span from one day to seven weeks. Before beginning treatment, you will be scheduled for a planning session to map out the treatment area. This procedure is called a simulation. You will undergo a CT scan to design your treatment and small tattoos will be made on the skin to make sure your treatments are accurate. Different techniques can be used to give radiation for lung cancer.

- Three-dimensional conformal radiotherapy (3-D CRT) combines multiple radiation treatment fields to deliver precise doses of radiation to the lung tumor. Radiation oncologists are able to tailor each of the radiation beams to focus on the tumor while protecting nearby healthy tissue.
- Intensity-modulated radiation therapy (IMRT) is a specialized form of 3-D CRT that modifies the radiation by varying the intensity of each radiation beam.



- Stereotactic body radiation therapy (SBRT) is a specialized form of radiation that delivers high doses of radiation to small and very precisely defined targets over a shortened course of therapy, usually in five treatments or less.
- Proton beam therapy is a type of external beam radiation therapy that uses protons rather than X-rays, which can give less radiation to normal tissue. The benefits of proton beam therapy over other external beam radiation therapies are being studied.

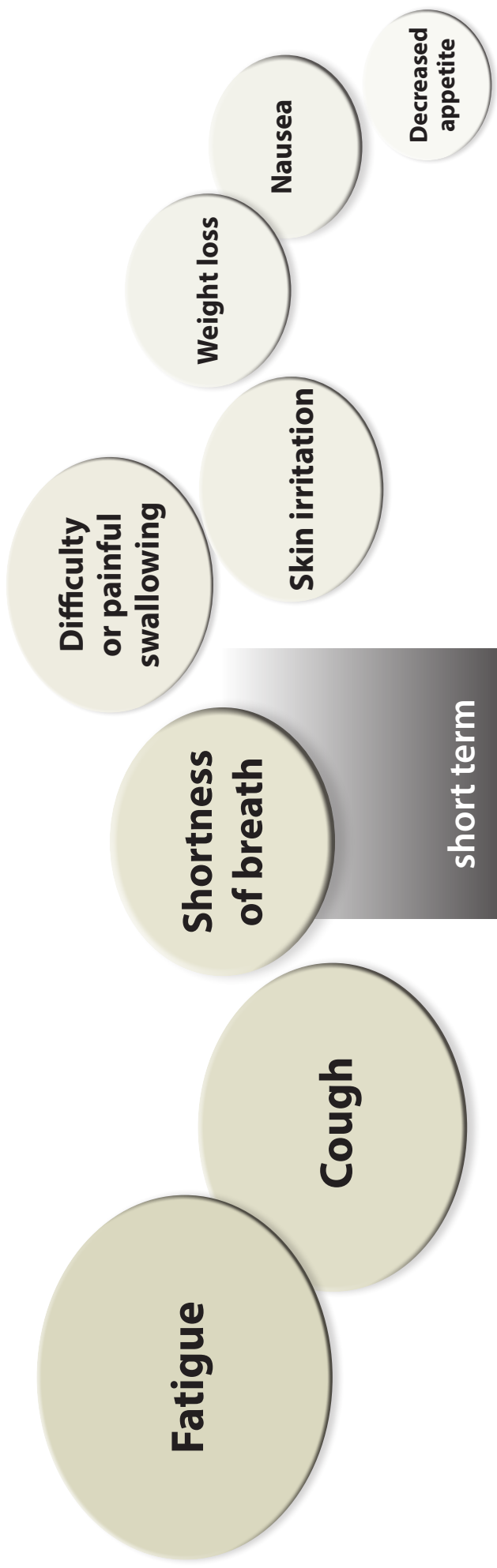


CARING FOR YOURSELF DURING TREATMENT

Cancer treatment can be difficult. You may have many issues to cope with. Ask your oncology team, family and friends for help.

- Get plenty of rest during treatment, and don't be afraid to ask for help.
- Follow your doctor's orders. Your doctor may ask you to call if you develop a fever of 101° F or higher.
- Ask your health care team 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. A dietician may be able to help you if you have issues with taste or eating.
- Treat the skin exposed to radiation with special care. Wear a shirt when in 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.

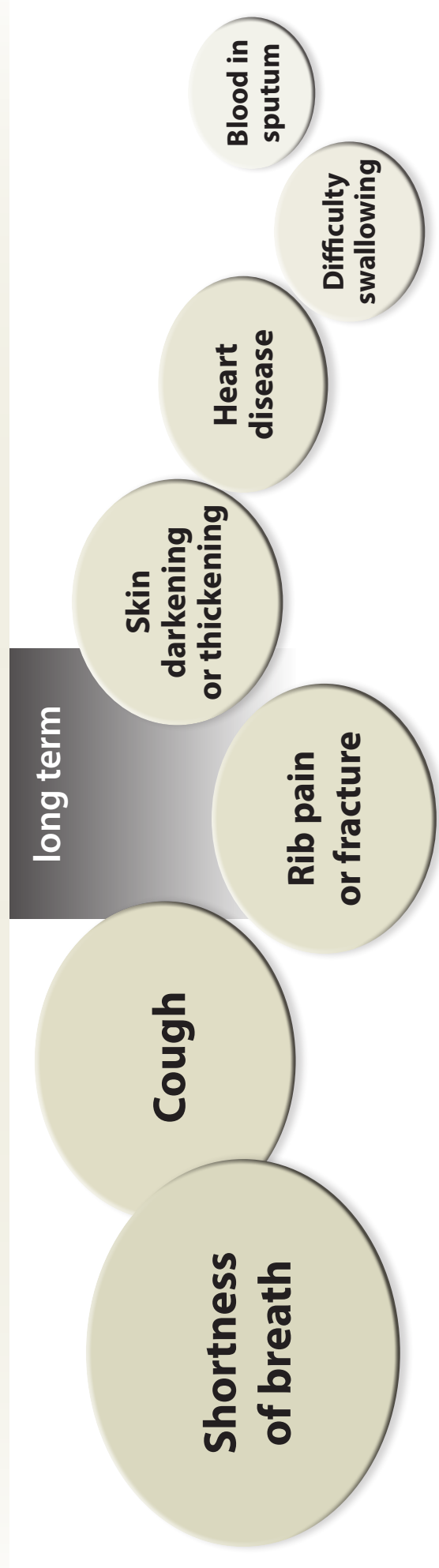




Side effects are usually temporary and usually go away shortly after treatment ends.

← more likely
RT for Lung Cancer Possible Side Effects
less likely →

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



*Larger bubbles show higher likelihood of occurrence. This list doesn't represent all of the possible side effects. Please talk to your doctors about your specific diagnosis.

SUGGESTED QUESTIONS TO ASK YOUR TEAM

What stage is the cancer?

What are the treatment options?

Are there any other physicians that I need to see?

What are the benefits, risks and alternatives of having this treatment?

What is my life going to look like (e.g., number of visits, types of visits)?

What can be done to prepare for this treatment?

How many treatments will I have?

How long will it take to get treatment started?

What are the potential short-term and long-term treatment side effects?

How will this treatment affect my breathing?

Who can I contact if I have questions or concerns during the treatment?

How will the cancer be monitored after treatment?

What can be done if the cancer comes back after treatment?

What kind of follow-up will I have with your team?

ABOUT THE RADIATION ONCOLOGY TEAM

Radiation oncologists are doctors who 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.





I Have Cancer. Now What?

Receiving a diagnosis of cancer can be frightening and confusing. [RTAnswers.org](https://www.rtananswers.org) provides detailed information and resources for cancer patients and their caregivers, including:

- Treatment information by disease site.
- Videos walking you through the radiation therapy treatment process.
- Stories from patients and caregivers sharing their experiences from diagnosis and treatment to survivorship.
- A "Find a Radiation Oncologist" portal where you can search by city, state and disease site specialty.

THE AMERICAN SOCIETY FOR RADIATION ONCOLOGY

(ASTRO) is the largest radiation oncology society in the world, with more than 10,000 members who specialize in treating patients with radiation therapies. As the leading organization in radiation oncology, biology and physics, ASTRO's mission is to advance the specialty of radiation oncology through promotion of equitable, high-quality care for people with cancer, cultivating and educating a diverse workforce, fostering research and innovation, and leading policy development and advocacy. Visit www.astro.org for more information.



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