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Treating Small Cell Lung Cancer

If you've been diagnosed with small cell lung cancer (SCLC), your cancer care team will discuss your treatment options with you. It's important to weigh the benefits of each treatment option against the possible risks and side effects.

How is small cell lung cancer treated?

Treatments for SCLC can include:

- Chemotherapy for Small Cell Lung Cancer
- Immunotherapy for Small Cell Lung Cancer
- Radiation Therapy for Small Cell Lung Cancer
- Surgery for Small Cell Lung Cancer
- Palliative Procedures for Small Cell Lung Cancer

Common treatment approaches

The treatment options for SCLC are based mainly on the stage (extent) of the cancer, but other factors, such as a person's overall health and lung function are also important. Sometimes, more than one of type of treatment is used. If you have SCLC, you will probably get chemotherapy if you are healthy enough. If you have limited stage disease, radiation therapy and – rarely – surgery may be options as well. People with extensive stage disease often receive chemotherapy with or without immunotherapy.

Treatment Choices for Small Cell Lung Cancer, by Stage

Who treats small cell lung cancer?

You may have different types of doctors on your treatment team, depending on the

stage of your cancer and your treatment options. These doctors could include:

- A medical oncologist: a doctor who treats cancer with medicines such as chemotherapy and immunotherapy
- A pulmonologist: a doctor who specializes in medical treatment of diseases of the lungs
- A radiation oncologist: a doctor who treats cancer with radiation therapy
- A **thoracic surgeon:** a doctor who treats diseases in the lungs and chest with surgery

Many other specialists may be involved in your care as well, including nurse practitioners, nurses, psychologists, social workers, rehabilitation specialists, and other health professionals.

• Health Professionals Associated with Cancer Care

Making treatment decisions

It's important to discuss all of your treatment options as well as their possible side effects with your family and your treatment team to make the choice that best fits your needs. If there's anything you don't understand, ask to have it explained.

If time permits, it is often a good idea to seek a second opinion. A second opinion can give you more information and help you feel more confident about the treatment plan you choose.

- Questions to Ask About Lung Cancer
- Seeking a Second Opinion

Thinking about taking part in a clinical trial

Clinical trials are carefully controlled research studies that are done to get a closer look at promising new treatments or procedures. Clinical trials are one way to get state-of-the art cancer treatment. In some cases they may be the only way to get access to newer treatments. They are also the best way for doctors to learn better methods to treat cancer. Still, they're not right for everyone.

If you would like to learn more about clinical trials that might be right for you, start by asking your doctor if your clinic or hospital conducts clinical trials.

• Programs & Services

Chemotherapy for Small Cell Lung Cancer

More information about chemotherapy

When is chemotherapy used?

Chemo travels through the bloodstream and reach most parts of the body. It is typically part of the treatment for small cell lung cancer (SCLC). This is because SCLC has usually already spread by the time it is found, so treatments such as surgery alone or radiation therapy alone would not reach all areas of cancer.

- For people with **limited-stage SCLC**, chemo is often given with radiation therapy. This is known as **chemoradiation**.
- For people with **extensive-stage SCLC**, chemo with or without immunotherapy is usually the main treatment. Sometimes radiation therapy is given as well.

Some patients in poor health might not be able to tolerate intense doses of chemo or a combination of drugs. But older age by itself is not a reason to avoid chemo.

Chemo drugs used to treat SCLC

Generally, SCLC is first treated with combinations of chemo drugs. The combinations used most often are:

- Cisplatin and etoposide
- Carboplatin and etoposide

If the SCLC worsens or comes back after treatment with the above combination of chemo drugs, other chemo drugs may then be given. These drugs are usually given by themselves:

- Topotecan (Hycamtin)
- Lurbinectedin (Zepzelca)
- Docetaxel (Taxotere)
- Paclitaxel (Taxol)
- Gemcitabine (Gemzar)
- Irinotecan (Camptosar)
- Temozolomide (Temodar)
- Vinorelbine (Navelbine)

How is chemotherapy given?

Chemo drugs for lung cancer are typically given into a vein (intravenous [IV]), either as an injection over a few minutes or as an infusion over a longer period of time. This can be done in a doctor's office, chemotherapy clinic, or in a hospital.

Often, slightly larger and sturdier IVs known as <u>central venous catheters</u>¹ (CVCs), central venous access devices (CVADs), or central lines are needed to give chemo. They are used to put medicines, blood products, nutrients, or fluids right into your blood. They can also be used to take out blood for testing.

Many different kinds of CVCs are available. The 2 most common types are the port and the PICC (peripherally inserted central catheter) line. A port is a small quarter-sized device that is placed under the skin in your upper chest. A small tube connects the port to a large vein that goes into the heart, called the superior vena cava. A PICC line is a small tube that is placed in the upper arm; that tube threads through the vein until it reaches the superior vena cava.

Doctors give chemo in cycles. Each cycle includes the period of treatment followed by a rest period to give you time to recover from the effects of the drugs. Cycles are most often 3 or 4 weeks long, and initial treatment is typically 4 to 6 cycles. The schedule varies depending on the drugs used. For example, some drugs are given only on the first day of the chemo cycle. Others are given for a few days in a row, or once a week. Then, at the end of the cycle, the chemo schedule repeats to start the next cycle.

For advanced cancers, the initial chemo combination is often given for 4 to 6 cycles, sometimes in combination with an immunotherapy drug. Beyond this, doctors might also recommend extending treatment with a single immunotherapy drug, for people who have had a good response to their initial chemotherapy or have had no worsening of their cancer.

If the cancer progresses (gets worse) during treatment or returns after treatment is finished, other chemo drugs may be tried. The choice of drugs depends to some extent on how soon the cancer begins to grow again. (The longer it takes for the cancer to return, the more likely it is to respond to further treatment.)

- If cancer returns more than 6 months after treatment, it might respond again to the same chemo drugs that were given the first time.
- If the cancer comes back sooner, or if it keeps growing during treatment, further treatment with the same drugs isn't likely to be helpful. If further chemo is given, most doctors prefer treatment with a single, different drug to help limit side effects.

Be sure to report any side effects you notice during chemo to your cancer care team so that they can be treated promptly. In some cases, the doses of the chemo drugs may need to be reduced or treatment may need to be delayed or stopped to prevent the effects from getting worse.

More information about chemotherapy

For more general information about how chemotherapy is used to treat cancer, see Chemotherapy⁷.

To learn about some of the side effects listed here and how to manage them, see <u>Managing Cancer-related Side Effects</u>⁸.

Hyperlinks

- 1. <u>www.cancer.org/cancer/managing-cancer/making-treatment-decisions/tubes-lines-ports-catheters.html</u>
- 2. <u>www.cancer.org/cancer/managing-cancer/making-treatment-decisions/clinical-trials.html</u>
- 3. <u>www.cancer.org/cancer/managing-cancer/treatment-types/chemotherapy/chemotherapy-side-effects.html</u>
- 4. <u>www.cancer.org/cancer/managing-cancer/side-effects/eating-problems/nausea-and-vomiting.html</u>
- 5. <u>www.cancer.org/cancer/managing-cancer/side-effects/low-blood-counts/infections.html</u>
- 6. www.cancer.org/cancer/managing-cancer/side-effects/fatigue.html
- 7. www.cancer.org/cancer/managing-cancer/treatment-types/chemotherapy.html
- 8. www.cancer.org/cancer/managing-cancer/side-effects.html

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Immunotherapy for Small Cell Lung Cancer

Immunotherapy is the use of medicines to stimulate a person's own immune system to recognize and destroy cancer cells more effectively.

- Immune checkpoint inhibitors
- Possible side effects of immunotherapy for SCLC
- More information about immunotherapy

Immune checkpoint inhibitors

An important part of the immune system is its ability to keep itself from attacking normal cells in the body. To do this, it uses "checkpoints" or proteins on immune cells that need to be turned on (or off) to start an immune response. Cancer cells sometimes use

checkpoints to avoid being attacked by the immune system. Drugs that target these

To learn about some of the side effects listed here and how to manage them, see Managing Cancer-related Side Effects².

Hyperlinks

- 1. www.cancer.org/cancer/managing-cancer/treatment-types/immunotherapy.html
- 2. www.cancer.org/cancer/managing-cancer/side-effects.html

References

Horn L, Mansfield AS, Szczsna A, Havel L, Krzakowski M, Hochmair MJ et al. First-Line Atezolizumab plus Chemotherapy in Extensive-Stage Small-Cell Lung Cancer. *N Engl J Med.* 2018 Dec 6;379(23):2220-2229.

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Radiation Therapy for Small Cell Lung Cancer

5 days a week, for 3 to 7 weeks. Radiation to relieve symptoms and prophylactic cranial radiation (PCI) is given for shorter periods of time, typically less than 3 weeks.

Newer EBRT techniques have been shown to help doctors treat lung cancers more accurately while lessening the radiation exposure to nearby healthy tissues. These include:

- Three-dimensional conformal radiation therapy (3D-CRT) uses special computers to precisely map the location of the tumor(s). Radiation beams are shaped and aimed at the tumor(s) from several directions, which makes it less likely to damage normal tissues.
- Intensity modulated radiation therapy (IMRT) is an advanced form of 3D therapy. The beams can be shaped and aimed at the tumor from several angles, and the strength of the beams can be adjusted to limit the dose reaching nearby normal tissues. This technique is used most often if tumors are near important structures such as the spinal cord. A variation of IMRT is called volumetric modulated arc therapy (VMAT). A machine delivers radiation quickly as it rotates once around the body. This allows each treatment to be given over just a few minutes.
- Four-dimensional conformal radiation therapy (4DCT) shows where the tumor is in relation to other structures during each part of the breathing cycle, as opposed to just giving a "snapshot" of a point in time, like a standard CT does. This technique might also be used to help show if a tumor is attached to or invading important structures in the chest, which could help doctors determine if a person might be eligible for surgery.
- Stereotactic body radiation therapy (SBRT), also known as stereotactic ablative radiotherapy (SABR), is most often used to treat early-stage SCLC when surgery isn't an option due to a person's health or in people who don't want surgery. It might also be considered for tumors that have limited spread to other parts of the body, such as the brain or adrenal glands.

Instead of giving a small dose of radiation each day for several weeks, SBRT uses very focused beams of high-dose radiation given in fewer (usually 1 to 5) treatments. Several beams are aimed at the tumor from different angles. To target the radiation precisely, you are put in a specially designed body frame for each treatment. This reduces the movement of the lung tumor during breathing.

• Stereotactic radiosurgery (SRS) isn't really surgery, but a type of stereotactic radiation therapy that is given in only 1 session. It can sometimes be used instead

of or along with surgery for single spots tumor.

Possible side effects of radiation therapy for SCLC

If you are going to get radiation therapy, it's important to ask your doctor beforehand about the possible side effects so that you know what to expect. Common side effects depend on where the radiation therapy is aimed and can include:

- Skin changes in the area being treated, which can range from mild redness to blistering and peeling
- Hair loss (in the area where the radiation enters the body)
- Fatigue (tiredness)
- Nausea and vomiting
- Loss of appetite and weight loss

Most of these side effects go away after treatment, but some can last a long time. When chemotherapy is given with radiation, the side effects may be worse.

Radiation therapy to the chest may damage your lungs, which might cause a cough, problems breathing, and shortness of breath. These usually improve after treatment is over, although sometimes they may not go away completely.

Your esophagus, which is in the middle of your chest, may be exposed to radiation, which could cause a sore throat and trouble swallowing during or shortly after treatment. This might make it hard to eat anything other than soft foods or liquids for a while. This also often improves after treatment is finished.

Radiation therapy to large areas of the brain can sometimes cause memory loss, fatigue, headaches, or trouble thinking. Usually these symptoms are minor compared with those caused by cancer that has spread to the brain, but they can affect your quality of life.

More information about radiation therapy bliyarmatio/F1 14 Ta5____

Surgery for Small Cell Lung Cancer

Surgery is rarely used as part of the main treatment for small cell lung cancer (SCLC), as the cancer has usually already spread by the time it is found.

In fewer than 1 out of 20 people with SCLC, the cancer is found as only a single lung tumor, with no spread to lymph nodes or other organs. Surgery may be an option for these early-stage cancers, usually followed by additional treatment (chemotherapy and/or immunotherapy).

- Tests before lung surgery
- Types of lung surgery
- Ways to do lung surgery
- Intraoperative imaging
- Possible risks and side effects of lung surgery
- After surgery
- More information about Surgery

Tests before lung surgery

If your doctor thinks the lung cancer can be treated with surgery you might need more tests, such as:

- Pulmonary function tests (PFTs) to see if you would have enough healthy lung tissue left after surgery.
- EKG (recording of your heart's electrical activity) and an echocardiogram (ultrasound of your heart) to check the function of your heart
- Blood work or other studies to be sure you're healthy enough for surgery.

Your doctor will want to check if the cancer has already spread to the lymph nodes between the lungs. This is often done before surgery with mediastinoscopy or another technique.

To learn more about these tests, see <u>Tests for Lung Cancer</u>¹.

Types of lung surgery

There are different types of lung resection, including:

- **Pneumonectomy:** This surgery removes an entire lung. This might be needed if the tumor is close to the center of the chest.
- **Lobectomy:** The lungs are made up of 5 lobes (3 in the right lung and 2 in the left). In this surgery, the entire lobe containing the tumor(s) is removed. If it can be done, this is often the preferred type of operation for SCLC.
- Segmentectomy or wedge resection: In these operations, only the part of the lobe with the tumor is removed. This approach might be used if a person doesn't have enough normal lung function to withstand removing the whole lobe.

 Sleeve resection:

Video-assisted thoracoscopic surgery (VATS) uses smaller incisions and typically has a shorter hospital stay and fewer complications than a thoracotomy. The cure rate after this surgery seems to be the same as with surgery done with a larger incision. But it's important that the surgeon doing this procedure is experienced, because it requires a great deal of skill.

Robotic-assisted thoracic surgery (RATS)

In this approach, the thoracoscopy is done using a robotic system. The surgeon sits at a control panel in the operating room and moves robotic arms to operate through several small incisions in the patient's chest.

RATS is similar to VATS in terms of less pain, less blood loss, and shorter recovery time.

For the surgeon, the robotic system may provide more maneuverability and more precision when moving the instruments than standard VATS. Still, the most important factor in the success of either type of thoracoscopic surgery is the surgeon's experience and skill.

Intraoperative imaging

Along with the results of imaging tests (such as CT scans) done before surgery, surgeons also rely on what they can see and feel during the operation to help determine which parts of the lung need to be removed. However, some lung tumors might not be

Possible risks and side effects of lung surgery

Surgery for lung cancer is a major operation and can have serious side effects, which is why surgery isn't a good idea for everyone. While all surgeries carry some risks, they depend to some degree on the extent of the surgery and a person's overall health.

Possible complications during and soon after surgery can include reactions to anesthesia, excess bleeding, blood clots in the legs or lungs, wound infections, and pneumonia. While it is rare, in some cases people might not survive the surgery.

Recovering from lung cancer surgery typically takes weeks to months. When the surgery is done through a thoracotomy, the surgeon must spread the ribs to get to the lung, so the area near the incision may hurt for some time after surgery. Your activity might be limited for at least a month or two.

If your lungs are in good condition (other than the presence of the cancer) you can usually return to normal activities after some time if a lobe or even an entire lung has been removed. If you also have another lung disease such as emphysema or chronic bronchitis (which are common among people who have smoked for a long time), you might become short of breath with activity after surgery.

www.cancer.org/cancer/types/lung-cancer/detection-diagnosis-staging/how-diagnosed.html

Palliative Procedures for Small Cell

limiting further fluid buildup. A number of substances can be used for this, such as talc, the antibiotic doxycycline, or a chemotherapy drug like bleomycin.

Surgical pleurodesis: Talc is blown into the space around the lungs during an operation. This is done through a small incision using thoracoscopy¹

Catheter placement

One end of the catheter (a thin, flexible tube) is placed in the chest through a small cut in the skin, and the other end is left outside the body. Once in place, the outside catheter can be attached to a special bottle to allow the fluid to drain out on a regular basis.

Treating fluid buildup around the heart

Lung cancer can sometimes spread to the area around the heart. This can lead to fluid buildup inside the sac around the heart (called a **pericardial effusion**), which can press on the heart and affect how well it works.

Pericardiocentesis

Pericardiocentesis is a procedure that drains the fluid with a needle placed into the space around the heart. This is usually done using an echocardiogram (an ultrasound of the heart) to guide the needle.

Creating a pericardial window

During surgery, a piece of the sac around the heart (the pericardium) is removed to allow the fluid to drain into the chest or belly. This opening is called a **pericardial window** and helps to keep the fluid from building up again.

Treating an airway blocked by a tumor

Cancer can sometimes grow into an airway in the lung, blocking it and causing problems such as pneumonia or shortness of breath. Sometimes this is treated with radiation therapy, but other techniques can also be used.

Photodynamic therapy (PDT)

Photodynamic therapy² is sometimes used to help open up airways blocked by tumors

to help people breathe better.

For this technique, a light-activated drug called porfimer sodium (Photofrin) is injected into a vein. This drug collects more in cancer cells than in normal cells. After a couple of days (to give the drug time to build up in the cancer cells), a bronchoscope is passed down the throat and into the lung. This can be done using either local anesthesia (numbing the throat) and sedation, or with general anesthesia (which puts you in a deep sleep). A special laser light on the end of the bronchoscope is aimed at the tumor, which activates the drug and kills the cells. The dead cells are then removed a few days later during a bronchoscopy. This process can be repeated if needed.

PDT can cause swelling in the airway for a few days, which could lead to some shortness of breath, as well as coughing up blood or thick mucus. Some of this drug also collects in normal cells in the body, such as skin and eye cells. This can make you very sensitive to sunlight or strong indoor lights. Too much exposure can cause serious skin reactions (like a severe sunburn), so doctors recommend staying out of any strong light for several weeks after the injection.

Laser therapy

Lasers can sometimes be used to help open up airways blocked by tumors to help people breathe better.

The laser is on the end of a bronchoscope, which is passed down the throat and next to the tumor. The doctor then aims the laser beam at the tumor to burn it away. This treatment can usually be repeated, if needed. You are usually asleep (under general anesthesia) for this type of treatment.

Stent placement

If a lung tumor has grown into an airway and is causing problems, sometimes a bronchoscope is used to put a hard silicone or metal tube called a **stent** in the airway to help keep it open. This is often done after other treatments such as PDT or laser therapy.

More information about palliative care

To learn more about how palliative care can be used to help control or reduce symptoms caused by cancer, see <u>Palliative Care</u>³.

To learn about some of the side effects of cancer or treatment and how to manage

them, see Managing Cancer-related Side Effects⁴.

Hyperlinks

- 1. www.cancer.org/cancer/diagnosis-staging/tests/endoscopy/thoracoscopy.html
- 2. <u>www.cancer.org/cancer/managing-cancer/treatment-types/radiation/photodynamic-therapy.html</u>
- 3. www.cancer.org/cancer/managing-cancer/palliative-care.html
- 4. www.cancer.org/cancer/managing-cancer/side-effects.html

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Treatment Choices for Small Cell Lung Cancer, by Stage

Small cell lung cancer (SCLC) is usually <u>staged</u>¹ as either limited or extensive. For treatment of limited-stage SCLC, a combination of chemotherapy and radiation is usually given. For treatment of extensive-stage SCLC, a combination of chemotherapy and immunotherapy is usually given.

Treating limited-stage SCLC

Treating extensive-stage SCLC

American Cancer Society

combinations, as well as other new treatments, could be a good option for some people. If you think you might be interested in taking part in a clinical trial, talk to your doctor.

SCLC that progresses or recurs after treatment

If the cancer continues to grow during treatment or <u>comes back</u>⁷, any further treatment will depend on the location and extent of the cancer, what treatments you've had, and on your health and desire for further treatment. It's always important to understand the goal of any further treatment before it starts. You should understand if it's to try to cure the cancer, to slow its growth, or to help relieve symptoms. It is also important to understand the benefits and risks.

If a cancer continues to grow during the initial chemotherapy treatment or if a cancer starts to grow after chemo has been stopped for less than 6 months, another type of chemo, such as topotecan may be tried, although it may be less likely to help. In these cases, if you are healthy enough, clinical trials are usually recommended. For cancers that come back after initial treatment is finished, the choice of chemo drugs depends on how long the cancer was in remission. (See Chemotherapy for Small Cell Lung Cancer.)

For more on dealing with a recurrence, see Coping With Cancer Recurrence⁸.

Hyperlinks

- 1. <u>www.cancer.org/cancer/types/lung-cancer/detection-diagnosis-staging/staging-sclc.html</u>
- 2. <u>www.cancer.org/cancer/types/lung-cancer/detection-diagnosis-staging/how-diagnosed.html</u>
- 3. www.cancer.org/cancer/managing-cancer/side-effects.html
- 4. <u>www.cancer.org/cancer/managing-cancer/making-treatment-decisions/clinical-trials.html</u>
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- 6. <u>www.cancer.org/cancer/managing-cancer/making-treatment-decisions/clinical-trials.html</u>
- 7. www.cancer.org/cancer/survivorship/long-term-health-concerns/recurrence.htmlwww.cancer.org/

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(https://www.cancer.org/cancer/acs-medical-content-and-news-staff.html)

Our team is made up of doctors and oncology certified nurses with deep knowledge of cancer care as well as journalists, editors, and translators with extensive experience in