The treatment you receive will depend on your lung cancer type, for example, whether you have a non-small cell lung cancer Adenocarcinoma or Squamous cell carcinoma, and if this is a sub-type with a mutation. For the pathologist to make an accurate diagnosis, they will need an adequate tissue sample – either from an initial or subsequent biopsy.

Your multidisciplinary team will also take into account the stage of your lung cancer, your general health and breathing capacity, and your personal wishes.

While your health care professionals will do everything they can to cure your lung cancer, factors such as the stage of the cancer at diagnosis sometimes mean that their best efforts cannot achieve a cure. For some people with advanced lung cancer, treatment can keep the disease under control for months or years without curing it. Treatment also can help control symptoms such as pain to make life more comfortable.

Broadly speaking, the treatment options for the two types of lung cancer are:

- **Non-small cell lung cancer** may be treated by surgery, radiotherapy, chemotherapy or a combination of these.

- **Small cell lung cancer** is usually treated with chemotherapy. In some cases, chemotherapy may be given in combination with radiotherapy. Surgery is rarely used to treat this type of cancer.

**Surgery**

The surgical removal of a tumour offers the best chance of a cure for patients with early-stage cancer. To decide if surgery is an option, your multidisciplinary team will look at whether or not the cancer has spread beyond the lungs, as well as your general well being and fitness, and your breathing capacity, to see if you’re fit enough for surgery.

There are several types of lung surgery:

- Wedge resection – only part of the lung, not a lobe, is removed.
- Lobectomy – a lobe of the lung is removed.
- Pneumonectomy – one whole lung is removed.

**Types of lung surgery**

There are several types of lung surgery.

*Illustration source: Cancer Council NSW*
Thoracentesis (pleural tap)
You may have symptoms like breathlessness, tiredness and pain when fluid builds up in the area between the lung and the chest wall (pleural space). Your doctor can relieve these symptoms by performing a thoracentesis.

In this procedure, your doctor inserts a hollow needle between your ribs to drain the fluid. This will take 30 to 60 minutes. A thoracentesis is performed under a local anaesthetic and usually is done on an outpatient basis.

Pleurodesis/tunnelled catheters
After having thoracentesis, fluid may re-accumulate between your lungs and chest wall. Your surgeon may perform another thoracentesis, but if the fluid continues to build up, your doctor may recommend a ‘pleurodesis’.

During a pleurodesis, a surgeon will inject talcum powder between the layers of your lung tissue (pleura). The powder inflames the membranes and makes them stick together. This closes the space between the pleura and prevents the fluid from coming back.

For this procedure, you will be given a general anaesthetic and are likely to stay in hospital for about three days.

If the fluid continues to come back, your doctor may suggest you have a tunnelled catheter inserted into the pleural space. This can be an effective way to drain the fluid and can be managed at home by a community nurse.

Radiotherapy
Radiotherapy treats cancer using ionising radiation (usually x-rays) to kill cancer cells. It can be effective in treating lung cancer that has not spread outside the chest – particularly with tumours lying close to vital organs that can’t be removed by surgery.

Radiotherapy is also used to treat cancer that has spread to the lymph nodes. In some cases, it may destroy all the cancer cells.

Radiotherapy options include:
- in combination with chemotherapy to treat lung cancer;
- after surgery to reduce the chances of the cancer coming back and to treat cancer that has spread;
- before surgery to shrink a tumour; and
- as palliative treatment to reduce symptoms, improve your quality of life or extend the length of life.

When planning radiotherapy treatment, your doctor will have a CT or PET scan taken of the treatment area. To ensure the same area is treated each time, the radiation therapist makes a few small permanent dot tattoos on your skin.

During treatment, you will lie on a treatment table. A machine that delivers the radiation will be positioned around you. The treatment itself will take 10 to 15 minutes. Receiving radiotherapy is painless and you should feel comfortable during the treatment.

Chemotherapy
Chemotherapy is the treatment of cancer with anti-cancer (cytotoxic) drugs. The aim of chemotherapy is to kill cancer cells and/or control the cancer with the least possible damage to healthy cells.

Sometimes, chemotherapy is combined with surgery or radiotherapy. Commonly, oncologists recommend treating patients with chemotherapy when the cancer is large or has spread outside the lungs. Chemotherapy may be given for several reasons.

- Before surgery, to try and shrink the cancer to make the operation easier.
- During radiotherapy, to increase the effectiveness of the radiotherapy.
- After surgery – to reduce the chances of the cancer coming back.
- As palliative treatment, to reduce or help manage symptoms of your cancer, such as pain or coughing. Chemotherapy may help relieve these systems by shrinking a tumour. It has been shown that chemotherapy can help improve or maintain your quality of life and/or extend your length of life.

6. Treatment Options
6. Treatment Options

Generally, chemotherapy is given intravenously through a drip or plastic catheter (tube) inserted into a vein in your arm, hand or chest, although some types of chemotherapy are in tablet form (oral).

Chemotherapy is given in cycles that typically last for three to four weeks. Intravenous chemotherapy may be given for a few days and the rest of the cycle is a break from treatment. The number of treatment cycles you have depends on what type of lung cancer you have and how well your body handles the side effects. You will most likely receive treatment as an outpatient.

**Maintenance therapy**

Once you have completed the first-line treatment course, if your disease responded to the drugs your doctor may recommend ongoing ‘maintenance’ treatment with chemotherapy or another therapy. Although the concept of maintenance therapy is not new, its use is growing. One reason for this is that new cancer drugs have fewer side effects and patients may be able to take them longer.

In clinical trials of maintenance therapy, clinical researchers found that certain people with advanced lung cancer could benefit from the continuation of some treatments. The therapy can contain the spread of the cancer and help patients live longer.

Maintenance therapy can be split into two categories – continuation maintenance and switch maintenance.

- **Continuation maintenance:** after completing a defined number of cycles of combination therapy (more than one type of chemotherapy or other drug), your treatment is continued with just one of the agents. The single agent may be a targeted therapy or a chemotherapy agent.

- **Switch maintenance** entails switching to a third new drug (chemotherapy or targeted therapy) that was not included in your initial treatment regime. Switch maintenance may commence after the initial cycle of chemotherapy. The switch to the new therapy continues until the disease progresses.

**Targeted therapies**

Rapid technological advances have enabled the development of targeted therapies, also called biological therapies. This new frontier of research gives physicians the ability to tailor cancer treatment for more effective and potentially less harmful outcomes.

These therapies target specific biological differences between cancer cells and normal cells to allow the selective destruction of the proliferating abnormal cells without damaging healthy cells. Many targeted therapies are used in combination with chemotherapy.

**How targeted therapies work**

Each type of targeted therapy has a specific mechanism of action that interferes with cancer cell growth and reproduction during the development, growth and spread of cancer cells. Targeted therapies affect the ability of cancer cells to grow, multiply, repair and/or communicate with other cells but have few effects on normal cells, which reduces treatment side effects.

These therapies can act against one or more specific molecular targets, such as a protein, receptor, enzyme, or the formation of new blood vessels requested for the growth of the tumour. Others are based on the genetic make-up displayed by the cancer cells. Many of these therapies focus on proteins that are involved in the cell signalling process. By blocking the signals that tell cancer cells how to continuously grow and divide, targeted therapies can stop their growth and division.
Depending on the subtype of your lung cancer, a targeted therapy may provide the best treatment option. This type of treatment may be recommended by your multidisciplinary team after your pathology and imaging tests have been analysed.

**How targeted therapies are used?**
Targeted therapies can be used alone, in combination with other targeted therapies, or in combination with other cancer treatments such as chemotherapy or radiotherapy.

Most of these therapies are available as pills and can be administered orally. This is a convenient way to receive cancer treatment with less impact on your quality of life. Other agents are given by intravenous infusion. The way the targeted therapy is given depends on the type of drug and its mechanism of action.

Many targeted therapies are still in the preclinical (laboratory) testing stage, some are available within clinical trials (testing in humans), and others have been approved for clinical use.

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**Case Study: Coleen’s treatment**

In 2006, a 57-year-old Victorian midwife, Coleen, found an unusual lump on her neck. Tests lead to a diagnosis with advanced, inoperable stage 3B non-small cell lung cancer. However, Coleen had to wait four weeks before starting treatment.

“The wait seemed like forever but my medical oncologist and radiation oncologist wanted the treatments to run concurrently and everything had to be absolutely spot on before they started,” said Coleen.

Coleen had an initial treatment of five weeks of radiotherapy plus chemotherapy. This was followed by a second line of chemo which was completed in early 2007.

The tumours shrank and although x-ray and scan results always mention radiation damage they also have the magic words, “No Evidence of Disease”.

Coleen praised her multidisciplinary team.

“At my first appointment, my radiation oncologist inspired me with his comment ‘we can cure this’,” she said.

“My medical oncologist also has been wonderful, professional and knowledgeable, but displaying the utmost caring and compassion… I trust him with my life, literally.

“I must also mention the chemo and radiation nurses – they’re truly special and I’ll be forever thankful for their gentleness, hugs and humour.”
6. Treatment Options

Chapter Summary

▷ There is a range of lung cancer treatments available. Your treatment will depend on your type of cancer and its stage, your general health and breathing capacity, and your personal wishes.

▷ There are four types of treatment, which may be used individually or in combination.

• Surgery to remove a tumour offers the best chance of a cure for patients with early-stage cancer.

• Radiation treats cancer by killing cancer cells, it can be effective in treating lung cancer that hasn’t spread outside the chest.

• Chemotherapy is the treatment of cancer with anti-cancer (cytotoxic) drugs. It may be used in combination with surgery, radiation or targeted therapies.

• Targeted therapies are a new type of medication that acts against one or more specific molecular targets characterising a subtype of lung cancer.