

Targeted therapies for lung cancer



Introduction

If you or someone you care for has just been diagnosed with lung cancer then it's almost certain that you will have lots of questions needing answered. This booklet was produced in partnership with lung cancer experts and people affected by lung cancer.

Understanding your lung cancer will help you make informed decisions about your care. Please remember that most healthcare professionals are only too happy to answer your questions and discuss any of your concerns. This booklet should be used along with information provided by your healthcare team.

We hope that this booklet will be of use to you. However, if any of your questions remain unanswered, talk to your cancer doctor or lung cancer nurse specialist, or call the **Roy Castle Lung Cancer Helpline free on 0333 323 7200 (option 2)**. You can also contact one of the many support organisations available (see page 51 of our *Living with lung cancer* booklet). You can also view the support organisations online at **www.roycastle.org/usefulcontacts**

Our Lung cancer - answering your questions pack contains two booklets - *Living with lung cancer* and *Managing lung cancer symptoms*, along with a DVD. Also available are four separate treatment booklets which can be slotted into the pack as required.

- Chemotherapy for lung cancer
- Radiotherapy for lung cancer
- Surgery for lung cancer
- Targeted therapies for lung cancer

You can view and order this information online at **www.roycastle.org/ayqpack** or call the **Roy Castle Lung Cancer Helpline free on 0333 323 7200 (option 2)**.

Contents

○ Introduction	2
○ Understanding targeted therapies for lung cancer	4
○ Molecular testing	5
○ Treating lung cancer with a targeted therapy	6
○ Receiving a targeted therapy treatment	9
○ Questions to ask	17
○ About us	19

Understanding targeted therapies for lung cancer

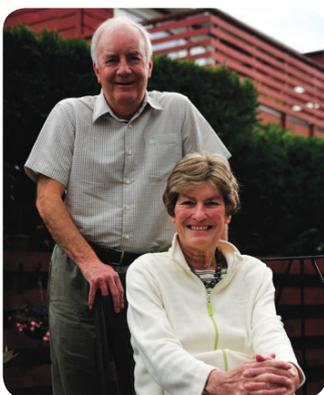
What is a targeted therapy?

Cancer grows and spreads by cells dividing. This is controlled by chemical processes within the cell which send a signal to start the division process. Sometimes a drug can be designed that blocks this chemistry; this is called a targeted therapy. Targeted therapies are also sometimes called biological therapies. There are various types of targeted therapies used to treat lung cancer. Each works in a different way to stop the growth and spread of cancer.

Targeted therapies only work for some people with non-small cell lung cancer. To find out if a targeted therapy may be suitable for you as the first type of treatment you receive, cancer doctors will have to test some of your cancer cells. This test is called either molecular or mutation testing.

If you have already had another type of drug treatment for non-small cell lung cancer, a targeted therapy may be used as a second or third type of treatment you receive. In this case, molecular testing is sometimes not needed.

Targeted therapies aren't a cure for lung cancer. However, they may stop the growth of your cancer and sometimes even shrinks the tumour and lengthen your life. They may also help improve your quality of life, for example, by reducing coughing, making your breathing easier and helping to reduce pain.



“My consultant said we’re going to put you on a targeted therapy. I’ve started taking one tablet every day, and I’d say eight weeks after that began, I was able to go shopping and meet people and say I feel a lot better now.”

Liz

Molecular testing

Why do you need molecular testing?

As well as being divided into different types, some non-small cell lung cancers also have specific characteristics based on what is wrong with the actual gene affected – these are called mutations.

The currently best known mutations of non-small cell lung cancers are called: epidermal growth factor receptor (EGFR), anaplastic lymphoma kinase (ALK), and KRAS. All of these mutations have one thing in common: they lead to uncontrolled cell growth and tumour formation. These mutations are also known as cancer biomarkers.

There are various different types of targeted therapy which work for different biomarkers. If you have inoperable non-small cell lung cancer and have an identifiable biomarker, you may be offered a targeted therapy as a first type of treatment for lung cancer.



How is molecular testing done?

Your cancer doctor will have already taken tissue to diagnose your lung cancer. If possible, pathologists in the hospital laboratory will use this existing tissue to test for mutations. This may take a few days after your original diagnosis. Sometimes you may need to have an extra biopsy performed if there is not enough tissue in the original sample to undertake the molecular test.

Treating lung cancer with a targeted therapy

Why am I getting a targeted therapy?

If you have been offered a targeted therapy as the **first type** of treatment you receive, it is because your lung cancer is inoperable and you have had a positive test for mutations which respond well to a targeted therapy. Research has shown that targeted therapies are likely to work well for you.

You may also have been offered a targeted therapy as the **second** or **third type** of treatment you receive if you have already had chemotherapy but your cancer continues to grow or spread. You may not need a mutation test for this. Targeted therapies are likely to work as well as chemotherapy for you and may have fewer side-effects.

Are there any alternative treatments available to me?

Yes, chemotherapy can also be used as a first or second treatment for lung cancer. Chemotherapy does not depend on the presence of mutations in the cancer tissue the way targeted therapies do. However, if you are mutation positive for an available targeted therapy, research shows that it is likely to work better for you as the first treatment you receive. Chemotherapy is also usually given through a vein rather than as a tablet, and involves more time in hospital. It may also have more side-effects than a targeted therapy. Please ask your cancer doctor or lung cancer nurse specialist for further information about other treatments that may work for you.

Which targeted therapies can be used to treat non-small cell lung cancer?

There are several types of targeted therapy licensed to treat lung cancer. Each drug has both a drug name and a brand or trade name. Drugs currently used to treat lung cancer in the UK are:

- gefitinib (brand name Iressa[®])
- erlotinib (brand name Tarceva[®])
- afatinib (brand name Giotrif[®])
- crizotinib (brand name Xalkori[®])

Afatinib, erlotinib and gefitinib all belong to a group of drugs called EGFR inhibitors. These drugs work by blocking the activity of EGFRs, which is a signal found on the surface of some cancer cells that tells cancer cells to grow, divide and spread. These can help to stop cancer from growing, multiplying and spreading through the body.

Crizotinib belongs to a group of drugs called RTK inhibitors. It blocks the activity of ALK, which is a protein that tells cancer cells to grow, divide, spread and develop new blood vessels. This can help to stop cancer from growing, multiplying and spreading through the body.

Targeted therapy treatments for lung cancer are continually developing. There are many clinical trials underway around the UK, and internationally, looking at the best way to treat lung cancer using a target therapy. Other targeted therapy drugs currently being researched to treat lung cancer include: cetuximab (brand name Erbitux[®]) and bevacizumab (brand name Avastin[®]).



There is more information on clinical trials in our *Living with lung cancer* booklet. See page 2 for details on how to get a copy.

Will these drugs be available to me?

Not all targeted therapies licensed to treat non-small cell lung cancer are currently available as a standard treatment on the NHS. When a new drug gains a European license it is available to buy and use as a treatment in the UK. However, NHS doctors are only allowed to use drugs which have been approved by either National Institute for Health and Care Excellence (England, Wales and Northern Ireland) or Scottish Medicines Consortium (Scotland), or are included on the Cancer Drug Funds list (England).

These organisations look at a combination of how well a drug works and the cost of using the drug. They then compare it to other available drugs used for the same health problem. Unfortunately this can lead to variations in the availability of these drugs on the NHS, depending on which country in the UK you live in and whether or not they have been approved for use on the NHS.



Please see our *Targeted therapies* factsheet series for up-to-date information on the availability of targeted therapy drugs for lung cancer. Call the **Roy Castle Lung Cancer Helpline free on 0333 323 7200 (option 2)** or visit www.roycastle.org/factsheets for more information.

Receiving a targeted therapy treatment

How do you take a targeted therapy?

Targeted therapy drugs for non-small cell lung cancer come as a tablet, which you take by mouth, every day, at home. You should take them at the same time/s each day.

It is very important that you take the tablets according to the instructions your cancer doctor or pharmacist has given you. Taking extra doses of some medicines can be harmful. In some cases even one extra dose can cause you problems. If you take extra doses of your medicine by mistake, you must tell your cancer doctor straight away.

You can keep taking a targeted therapy for as long as it keeps working for you.



Please see our *Living with lung cancer* DVD for more information on targeted therapies. See page 2 for details on how to get a copy.

Can I take the targeted therapy with other medicines or herbal remedies?

Some other medicines can be harmful to take at the same time as a targeted therapy. Tell your cancer doctor or lung cancer nurse specialist about any other medicines you take. This includes prescription medicines, over-the-counter medicines, vitamins, and herbal supplements. Your cancer doctor may change the dose or choose different medicines while you are taking a targeted therapy.

Do targeted therapies have side-effects?

All forms of cancer treatment have side-effects of one sort or another. Most people experience some side-effects from taking a targeted therapy drug. Side-effects vary from person to person and depending on which drug you are taking. You will not experience all of them and some people experience very few side-effects.

The important thing is to tell your cancer doctor or lung cancer nurse specialist if you are having problems as they will be able to help.

Targeted therapy	Common side-effects (affects more than 10 in every 100 people)
gefitinib (brand name Iressa®)	<p>Most common side-effects:</p> <ol style="list-style-type: none">1. Rash and other skin changes which may be dry and itchy. Most often on your face, upper chest, and back. Avoid being out in the sun and moisturise your skin regularly. Your lung cancer nurse specialist will be able to give you advice about this.2. Diarrhoea. This is most likely to start within the first week or two of taking gefitinib. <p>Other very common side-effects:</p> <ul style="list-style-type: none">• Dry, red or sore mouth.• Feeling or being sick.• Loss of appetite.• Increase of a liver enzyme called alanine aminotransferase in a blood test; if too high, your cancer doctor may stop your treatment.• Weakness.

Targeted therapy	Common side-effects (affects more than 10 in every 100 people)
<p>erlotinib (brand name Tarceva®)</p>	<p>Most common side-effects:</p> <ol style="list-style-type: none"> 1. Rash and other skin changes which may be dry and itchy. Most often on your face, upper chest, and back. Avoid being out in the sun and moisturise your skin regularly. Your lung cancer nurse specialist will be able to give you advice about this. 2. Diarrhoea. This is most likely to start within the first week or two of taking erlotinib. <p>Other very common side-effects:</p> <ul style="list-style-type: none"> • Abnormal blood tests for the liver function. • Cough. • Depression. • Difficulty in breathing. • Feeling or being sick. • Fever. • Hairloss. • Headache. • Infection. • Loss of appetite and decreased weight. • Rigors (sudden feeling of cold and shivery with a rise in temperature). • Skin sensation or numbness in the extremities. • Sore mouth. • Stomach pain, indigestion and flatulence (wind). • Tiredness.

Targeted therapy	Common side-effects (affects more than 10 in every 100 people)
<p>Crizotinib (brand name Xalkori®)</p>	<p>Most common side-effects:</p> <ol style="list-style-type: none"> 1. Eyesight problems. Seeing flashes of light, blurred vision, or double vision, often beginning soon after starting treatment. Tell your cancer doctor straight away if you experience this. 2. Feeling or being sick and diarrhoea. <p>Other very common side-effects:</p> <ul style="list-style-type: none"> • Abnormalities in liver blood tests. • Change in sense of taste. • Constipation. • Dizziness. • Leukopenia (reduction of white blood cells which are important in fighting infection). • Neuropathy (feeling of numbness or pins and needles in the joints or muscles). • Oedema (excess fluid in body tissue, causing swelling of the hands and feet). • Reduced appetite. • Tiredness. • Oesophageal (gullet) disorders.

Targeted therapy	Common side-effects (affects more than 10 in every 100 people)
<p>Afatinib (brand name Giotrif®)</p>	<p>Most common side-effects:</p> <ol style="list-style-type: none"> 1. Diarrhoea. This is most likely to start within the first two weeks of taking afatinib. 2. Rash and acne like skin conditions which may be dry and itchy. Avoid being out in the sun and moisturise your skin regularly. Your lung cancer nurse specialist will be able to give you advice about this. <p>Other very common side effects:</p> <ul style="list-style-type: none"> • Infection of the nail and surrounding area. • Reduced appetite. • Nosebleeds. • Inflammation of the lining of the mouth.

The above information on side-effects is taken from Summary of Product Characteristics (SPC), which is provided for each drug, as detailed in the electronic Medicines Compendium (eMC). For further information about drug side-effects please go to www.medicines.org.uk.

“I was advised there may be some side-effects with the targeted therapy I am taking. I have had a rash but have managed to cope with it by using creams my doctor has given me”

Margaret

Practical tips for managing common side-effects

Breathing difficulties/Infection

If you have breathing difficulties, a cough or high temperature (37.5C or higher), you need to contact your cancer doctor or lung cancer specialist nurse for urgent advice.

Diarrhoea

- There are anti-diarrhoea medications, which can help to reduce diarrhoea in most people.
- Take small sips of liquids (such as sports drinks without sugar) often throughout the day.
- Eat mild food, such as toast and crackers.
- Limit spicy foods.

Feeling or being sick

- There are very powerful anti-sickness drugs, which can help reduce sickness in most people.
- The type of food that you eat or smell may make you feel worse.
- If the sickness continues, speak to your cancer doctor or lung cancer nurse specialist.

Rash and other skin problems

- Moisturise your skin regularly. Your lung cancer nurse specialist will advise which creams are best for you.
- Avoid being out in hot sun.
- Use a sunscreen of SPF 15 or higher, preferably containing zinc oxide or titanium dioxide.
- Wear a hat in the sun.

-
- Avoid over-the-counter spot-related treatments, including products with benzoyl peroxide.
 - Remove any dermatologist-approved makeup with a gentle liquid cleanser.

Tiredness/Breathlessness

- If you feel breathless, your legs ache or you are concerned that you feel too tired, ask your cancer doctor or lung cancer nurse specialist for advice.
- A small amount of regular exercise will also help reduce your tiredness.
- Make time for activities that help you relax.
- If you are feeling breathless, planning ahead will help to reduce the energy you spend on everyday activities.



Please see our *Living with lung cancer* and *Managing lung cancer symptoms* booklets for more information on managing side-effects. See page 2 for details on how to get a copy.

You will be given a contact phone number to phone if you experience difficulties with side-effects. This number should be used at times when it may be difficult to contact your lung cancer nurse specialist or cancer doctor, such as during the night or at the weekend. There is space at the end of page 18 for you to write down the phone numbers.

How do the doctors know if the targeted therapy is working?

It can be difficult to measure exactly how well it is working, although usually an assessment will be made at some point during your treatment. Usually this will be done by chest x-ray and/or CT scan.



If your symptoms have improved this may also suggest that the treatment is working, for example, less cough or breathlessness. If there is evidence that your cancer is responding to the targeted therapy then treatment will continue, as long as you are not having side-effects which you can't cope with. If symptoms become too much

for you to cope with, your doctor may consider reducing the dose. If there is evidence that your cancer is not responding then it is important to know this, so that a decision on an alternative treatment can be made. Sometimes there will be no change in the state of your tumour when the x-ray or scan has been done. This may seem disappointing but is a worthwhile response, especially if you feel better.

Even if the targeted therapy has not changed the size of the tumour, it may well have delayed the growth.

“Taking a targeted therapy for me is an easy way to a kind of normality, considering that I am still battling lung cancer. Is a painless easy way to a normal life.”

Franca

Questions to ask

Questions to ask your doctor or lung cancer nurse specialist

Before choosing a targeted therapy as a treatment option, you should understand the expected benefits, side effects, and risks. Ask your cancer doctor or lung cancer nurse specialist these questions on your next visit. Learn as much as you can about your treatment, and get an idea of the expected outcome.

1. What type of targeted therapy will I be getting?
2. What is the aim of the targeted therapy?
3. Are there other types of treatment that could be suitable for me instead of a targeted therapy?
4. What are the risks and side-effects of the targeted therapy I will be taking? How do these side-effects compare with side-effects of other treatments?
5. How long will I have to wait before starting treatment?

6. How will I know if the targeted therapy is working?

7. What can I do to prepare for treatment and reduce the chance of side-effects?

8. Will I need to change my lifestyle in any way?

9. If this targeted therapy doesn't work, are there other treatments I can get?

10. Are there any clinical trials I would benefit from?

Lung cancer nurse specialist

Name:

Phone number:

Other contact phone number:

About our lung cancer information

All of our information is written either by our information team or by lung cancer experts. We have a panel of lung cancer experts made up of doctors, nurse specialists and other health professionals involved in the care of people affected by lung cancer. These people help us on a voluntary basis. You can find out about our Expert Panel at www.roycastle.org/expertpanel

Our information is also reviewed by members of our Reader Panel (made up of people who have experience of lung cancer). This ensures that our lung cancer information meets their needs. You can find out about our Reader Panel at www.roycastle.org/readerpanel

This booklet was produced in partnership with



Our information is accredited by The Information Standard, which makes sure that it is trustworthy, easy to read and reliable. It also must be based on the best clinical evidence that is available.

The information is evidence based and follows national clinical guidelines for the management of lung cancer. You can find references to sources of information within this booklet at www.roycastle.org/evidence

First Edition: January 2014

© Roy Castle Lung Cancer Foundation

Registered charity number England and Wales 1046854 - Scotland SC037596

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, including photocopying, recording or otherwise, without the prior permission of Roy Castle Lung Cancer Foundation.

We value your feedback

If you would like to tell us what you think about this information booklet or would like to join our Reader Panel and review our lung cancer information, please e-mail us at info@roycastle.org



ROY CASTLE
LUNG CANCER
FOUNDATION

Roy Castle Lung Cancer Foundation is the charity that gives help and hope to people affected by lung cancer. The charity has two aims – supporting people living with lung cancer and saving lives.

Supporting people living with lung cancer

Working closely with lung cancer nurses, we provide information, run lung cancer support groups and offer telephone and online support. Our patient grants offer some financial help to people affected by lung cancer.

Saving lives

We fund lung cancer research, campaign for better treatment and care for people who have lung cancer, and raise awareness of the importance of early diagnosis. Our lung cancer prevention work helps people to quit smoking and encourages young people not to start smoking.

Contact us

For more information please call the **Roy Castle Lung Cancer Helpline free on 0333 323 7200 (option 2)** or visit our website at **www.roycastle.org**

Head Office

Enterprise Way, Liverpool L13 1FB

Email: foundation@roycastle.org

Information and Support Services

98 Holm Street, Glasgow G2 6SY

Email: info@roycastle.org

GIVING HELP AND HOPE



[Roycastlelungcancer](https://www.facebook.com/Roycastlelungcancer)



[@Roy_Castle_Lung](https://twitter.com/@Roy_Castle_Lung)

