Radiotherapy
to the lung
Your treatment
You and your oncologist have decided that a course of radiotherapy would be the most appropriate way of treating your cancer.

When recommending radiotherapy, your doctor will have taken into account the risks and benefits of the treatment. Although there will be side effects, it is felt that the advantages for you outweigh the disadvantages.

Consent – asking for your consent
We want to involve you in decisions about your care and treatment. If you decide to go ahead, you will be asked to sign a consent form. This states that you agree to have the treatment and you understand what it involves.

If you would like more information about our consent process, please speak to a member of staff caring for you.

The risks of receiving radiotherapy to the lung and mediastinal (mid-chest) region are outlined in this leaflet.

You may decide that you do not want to have radiotherapy – this is an option for you to consider. In this case, you might want to talk again with your doctor and let them know what you have decided.

You can request a second opinion on your diagnosis or treatment at any time during your consultation or treatment process. Please speak to your clinical oncologist or GP for information on how to do this.

Your key worker……………………………………………….

Their contact number…………………………………. 
Once you have consented (agreed) to radiotherapy, you will be referred for a CT planning scan, and radiotherapy.

The radiotherapy bookings team are on 020 7188 3160.

You will come to the Radiotherapy Department in the Cancer Centre at Guy’s for a planning scan. You may have a contrast injection (dye) to make your scans clearer. This appointment can take up to two hours.

You will return to the Radiotherapy Department for your first radiotherapy treatment (usually starting on a Monday). Treatment is usually daily (Monday to Friday) for the prescribed number of treatments. A course of treatment can be between one and six weeks.

If chemotherapy is necessary, this is given on the Chemotherapy Floor within the Cancer Centre at Guy’s, starting on the first day of radiotherapy.

Blood is taken for testing as necessary, and you will have a weekly review appointment with your advanced thoracic radiotherapy practitioner.

You will be seen for a follow-up appointment four to six weeks after completing your radiotherapy.

Your treatment is complete.
What is radiotherapy?
Radiotherapy uses radiation (high energy x-rays) to treat cancer. The radiation only damages the cells within the treatment area, killing the cancer cells but allowing healthy cells to recover. Any side effects of radiotherapy are usually isolated to the area being treated.

Treatment is given over a prescribed number of days/weeks so that only small doses (fractions) of radiation are given. Your oncologist will prescribe the amount of radiation you need and will tell you how many treatments you will have and over how many weeks. Treatment is given on weekdays (Monday to Friday) with a break at the weekend.

It is important that you attend all of your treatment appointments.

What happens before radiotherapy?
Pacemakers – If you have a pacemaker, please tell your consultant as soon as possible. You will need to have a pacemaker check before your treatment.

Pregnancy – All female patients under the age of 60 will be asked to confirm their pregnancy status before the first planning session starts. It is very important that you are not, and do not become, pregnant while undergoing radiotherapy planning and treatment. If you think you may be pregnant at any time during your course of treatment, please tell your clinical oncologist or radiographer immediately. If necessary, please speak to your GP about contraception methods suitable for use during radiotherapy.
Lung Function Test – This test may be performed before starting radiotherapy to help determine what radiotherapy dose your oncologist wants you to have.

Blood tests – Patients having chemotherapy may require more blood tests.

Other tests – If you are having chemotherapy, you may have to have an EDTA to monitor your kidney function.

What if I am also having chemotherapy?
If you are having chemotherapy as well as radiotherapy, you will have a pre-treatment appointment to visit the Chemotherapy Day Unit at the Cancer Centre at Guy’s.

A nurse will talk to you about chemotherapy and its side effects, and will give you information on further sources of support.

Side effects of radiotherapy
Receiving radiotherapy does have side effects. The most common side effects are listed below and are grouped into short-term and long-term effects. Your oncologist will have discussed these with you as part of your consent to treatment. You can ask someone in your treatment team at any point if you would like clarification of these side effects.

While we cannot prevent side effects, we can help you to manage them. Side effects that occur during your radiotherapy are called early (or acute) side effects. They usually begin to occur one to two weeks after your treatment starts. As your treatment progresses, these
become more severe and are usually at their worst one to two weeks after your radiotherapy treatment finishes. Then, they gradually start to improve and by three months after the completion of your treatment, most will have resolved or at least improved considerably. Early side effects affect all patients, but the severity varies.

There are also side effects that occur months to years after the treatment has finished – these are called long-term side effects. You may experience long-term side effects, but not everybody does. They may start during treatment and then gradually become worse, or they may develop slowly over a long period of time. Some may improve slowly but others may be permanent.

We use the most modern radiotherapy techniques, including intensity modulated radiotherapy (IMRT) and image guided radiotherapy (IGRT) to keep side effects to a minimum. However, some of the side effects described below are unavoidable. We will support you and help you to manage these side effects, with advice on diet and medications when necessary. Also, you will be reviewed by the advanced radiotherapy practitioner, who will assess your reactions to treatment.

**Early side effects**

**Cough:** Radiotherapy to the chest area might cause some inflammation to your lungs. This can cause a cough, or make your cough worse, which is quite normal. If you notice any changes in the colour of your sputum (spit) please inform your radiotherapy team/doctor. A cough medicine may be prescribed if you have a dry cough.
You may benefit from a nebuliser if your cough persists and you have trouble clearing the sputum in your throat and chest. This will be ordered and provided if necessary. This is a small portable machine that produces a vapour that can assist in clearing sticky or thick sputum from your chest and airways.

It is important to inform the radiographers/team of any changes, so that they can be addressed during your treatment review or sooner if necessary.

**Breathlessness:** This may become worse during your treatment but will gradually improve after your radiotherapy finishes. This is due to the inflammation caused by the radiotherapy. If necessary, you will be referred to a specialist physiotherapist who will be able to help you manage your symptoms.

**Tiredness/lethargy:** A sense of tiredness and lack of energy may occur during radiotherapy, but will slowly settle once treatment is completed. The best way to cope is to rest, eat regularly and do a small amount of light exercise (such as walking). Ask your friends and family to help you with daily activities.

**Difficulty swallowing:** Some patients tend to explain this as a feeling of food getting stuck in their oesophagus when eating. This is quite normal due to the inflammation (swelling) caused by the radiotherapy. At this point we would advise to avoid those foods which feel like they are getting stuck and eat meals which are softer and easier to swallow. Please inform the team when this happens, as this can be managed with specialist input from a dietician.
Pain/discomfort when swallowing: You may also find that you experience some pain/discomfort when swallowing. Please inform the radiographers/team if this happens as, it can be managed with pain medication.

Itchy inflamed skin: Radiotherapy commonly causes inflammation, redness and itching one to two weeks after treatment begins and can affect the entire treatment area. To reduce the likelihood of this reaction we suggest the following

**Washing:** It is important to keep the treatment area clean. Shower/bath using lukewarm water and use your usual soap or shower gel. Aqueous cream may be used as a soap substitute but not as a leave-on moisturiser. Use a soft towel to gently pat the skin dry – do not rub.

**Moisturising:** Moisturising in the treatment area will help your skin to cope better. You may continue to use your usual moisturiser or if you need to buy one, we recommend one without the additive, sodium lauryl sulphate (SLS). During treatment, apply the moisturiser sparingly twice a day or more often if your skin is very itchy.

**Swimming:** Reduce the number of times you swim in chlorinated water as this can have a drying effect on the skin. After swimming, shower to remove excess chlorine and stop swimming if the skin becomes sore.

**Hydrocortisone cream 1%:** this is a steroid that works by reducing inflammation. It can be prescribed if the itchiness becomes problematic.

**Do not** use either the moisturiser or hydrocortisone cream on broken skin. Check your skin daily before
applying creams. Dressings will be given for broken skin.

Do not scratch your skin as it is very fragile during radiotherapy.

**Late side effects**

**Scarring of the lung (fibrosis):** A small area of the lung within the treatment area may become scarred. This may cause more breathlessness. If this becomes a problem, see your hospital doctor or GP, as there are medicines and breathing exercises which can help.

**Scarring of the oesophagus:** This may make it difficult to swallow solid food. Occasionally, a minor operation may be required to stretch your oesophagus.

**Late malignancy:** There is a very small chance of developing another cancer at the site of the treatment area 10 – 20 years after radiotherapy.

**Who looks after me during treatment?**

A number of healthcare professionals will be involved in your treatment and care. Below is a list of all of the doctors, nurses, specialists and departments who will look after you while you are having radiotherapy.

**Oncologists** are doctors who are trained in the use of radiotherapy and chemotherapy. The consultant oncologist will be in charge of your care. Oncologists are supported by a team of specialist registrars, therapy radiographers, nurses, dieticians, speech and language therapists and administrative staff.
Therapy radiographers are specifically trained to plan and deliver the radiotherapy. They will have day-to-day responsibility for you while you are receiving radiotherapy.

Your advanced radiotherapy practitioner will provide support and advice on radiotherapy side effects and their management. You will be reviewed once a week by a member of the team.

Your clinical nurse specialist (CNS) will provide support and advice on all aspects of your treatment.

Oncology nurses provide support and advice on the side effects of radiotherapy and chemotherapy and their management. Chemotherapy nurses will be involved in delivering chemotherapy treatment if necessary.

The nutrition and dietetics department will assess your nutritional wellbeing before, during and after your radiotherapy and/or chemotherapy. They will provide advice about your diet, such as ways to change the texture and types of foods you are eating, and can provide you with strategies to maintain your weight. If you are experiencing difficulties with eating and drinking, the dietitian may suggest nourishing drinks which are available on prescription. You will see the dietitian during your treatment and for rehabilitation after your treatment is complete.

Respiratory physiotherapists provide support and advice on breathing symptoms related to your cancer and the side effects caused by the radiotherapy.
The Acute Oncology Assessment Unit will provide emergency medical care for any side effects of treatment, or problems relating to the cancer itself. This service is available between 9am and 6pm, Monday to Friday. Emergency contact details are at the end of this leaflet.

**Radiotherapy planning**

Following your initial outpatient appointment with the doctor, you will be sent a letter asking you to attend the Radiotherapy Department at the Cancer Centre at Guy’s for a CT (computerised tomography) scan.

Please bring your appointment letter with you, and book in at the reception of the Radiotherapy Department when you arrive.

A member of the pre-treatment radiotherapy team will explain what is going to happen. During this discussion you will be asked to confirm your name, address and date of birth. You will be asked for this information before every procedure/treatment undertaken in the department.

We will ask you to **re-confirm consent** to make sure you are certain that you would like to go ahead with the proposed treatment.

**CT scan**

A CT scanner is a special x-ray machine that produces a series of detailed images of the inside of your body.
This scan is only for planning your treatment. The images are sent to a planning computer and used to reconstruct a 3D image of your chest. The oncologist will then use this image to accurately plan your radiotherapy.

You may eat and drink normally on the day of your scan and throughout your treatment appointments, and there is no harm in being around other people.

For the scan, we will ask you to lie on the couch and the radiographers will move you to the position that you will be in for your radiotherapy treatment. You will be scanned with your arms above your head. It is important that you are comfortable and are able to lie still in this position, as the scan will take about 30 minutes. Please tell the radiographers if you do not think this will be possible.

The couch will move slowly through the open scanner. You will not feel anything and nothing will touch you. You will be asked to breathe normally and to keep as still as possible.

It may be necessary to have a contrast injection to provide clearer CT images.

**What is a contrast injection?**

A contrast injection is a type of dye that helps us get a better understanding of the internal structures of your body. A liquid dye called Omnipaque® will be injected into a vein in your arm.
This allows us to see your blood vessels more clearly during the CT scan, and will provide clearer pictures for your doctor to plan your treatment. Your doctor will discuss this with you and may send you to have a blood test before your planning appointment.

Using a contrast injection does not usually cause any problems for patients. However, some people can experience side effects. The most common side effects are a general sensation of warmth in your body and/or a metallic taste in your mouth during the contrast injection.

Other possible side effects include feeling or being sick, headache, high/low blood pressure or diarrhoea. If you have any questions or would like further information on the side effects of the contrast injection, please ask us before your scan.

Allergic reactions to contrast dye have been reported but are rare. It is very important that you complete the questionnaire provided when you arrive for the scan and detail any allergies you have.

Please tell the radiographer immediately if you experience any symptoms following the injection, especially if you have difficulty breathing and/or a rash.

If you have diabetes and currently take metformin, please let the radiographers know and follow the advice given by them and your doctor.
What are the alternatives?
It is sometimes not possible to use the contrast injection for medical reasons, or if access to your veins is not successful. In this situation, the CT scan will be performed without contrast.

How long will I be in hospital?
You may be in the department for up to two hours. Please bring any snacks you might need with you, particularly if you have diabetes.

When the injection and scan are complete, you will need to remain in the hospital for a further 15 minutes. If you feel unwell or develop any symptoms, you must tell a member of staff.

During the CT scan
For the scan you will need to remove all your clothing from the waist up. We will provide a gown, but you will need to remove this for the scan and all treatments. You will need to lie on the CT table on your back, with your hands above your head holding onto a bar. Please let the radiographers know if you are experiencing any pain or there are areas where the position is not comfortable.

A radiographer will make some pen marks on your chest and place a sticker on it to mark the area that needs to be scanned. This is done so that the mark shows up on your scan. The pen marks and stickers will be removed after the scan is completed.

The CT table will be raised to go through the scanner and the radiographers will then leave the room. They will
be watching you at all times through a one way mirror. The radiographers will start the scan from outside the room. You will feel the bed slowly move in and out of the scanner, and hear the machine buzzing. The scan should only take a few minutes.

CT scanner Image supplied courtesy of Siemens

**After the CT scan**

Once the scan is completed, the radiographers will come back into the room. They will take some measurements and make some very small permanent ink marks (tattoos) on your chest. These marks help to position you correctly for your future treatments.

Before you leave the department, you will be given a provisional (to be confirmed) list of all your radiotherapy appointments – **please bring this list with you to your**
**first treatment appointment.** You will be given the confirmed list of appointments on your first day of radiotherapy treatment, approximately two weeks after your CT scan.

**What if I have any problems after I have gone home?** If you feel unwell or develop any side effects once you have left the hospital (including signs of an allergic reaction, such as wheeziness, difficulty breathing, tightness in your chest, skin rash, lumps, itchy spots, swelling of your face, dizziness or feeling faint), you must contact your GP or local Emergency Department (A&E).

**What is a radiotherapy plan?** Your radiotherapy plan is the personalised design of your radiotherapy treatment. It is tailor-made for you and is based on the CT scan that you had. A team of doctors, radiographers and physicists will work together to decide where the treatment needs to be directed, avoiding as much healthy tissue as possible.

**First day of radiotherapy treatment**
When you arrive for your appointment, please book in at reception. You will then be directed to the treatment waiting area.

One of the radiographers will discuss your treatment with you and you will be able to ask any questions that you may have.

Wait for your name to appear on the screens, and then you will be asked to get changed. Dressing gowns are provided or you may bring your own if you prefer.
You will be asked to lie on the treatment table, which will be set up with the same equipment as when you had your CT scan. You should relax, stay still and breathe normally. Radiotherapy treatment is given by a machine called a linear accelerator, often referred to as a linac.

The lights will be dimmed so that the radiographers can see the lasers that will help them to position you correctly. You will hear the machine move around you. It will come close to you but will not touch you. You will hear radiographers taking various measurements and feel the bed moving. Once you are in the right position, the radiographers will leave the room and you will hear a buzzing sound – this is the door locking. You will be alone in the room during your treatment but the radiographers will be watching you all the time on closed circuit television. If you need assistance at any point,
just wave a hand and the radiographers can immediately return to the room.

Digital x-ray images are taken regularly during your treatment to ensure that the treatment is being delivered accurately. There will be a short delay while these images are assessed and you may feel the bed move as the radiographers adjust its position from outside of the room. Treatment will then be delivered and the machine will move around you to treat you from different angles.

This whole process will take approximately 20 minutes, then the radiographers will help you down from the treatment table. The table will be quite high up, so it is very important that you do not move or attempt to get off the table without assistance.

Please note: There is no secure storage provided during your radiotherapy treatment, so please do not bring any valuables with you to these appointments.

Treatment review
You will be seen each week by a member of the treatment support team during treatment. The team will support you and help you to manage your side effects. You will have separate appointments for this on your appointment list.

How do I get more of my medicines?
You can discuss in clinic which medicines are working or not working, and which symptoms are affecting you. After being prescribed medicines at the hospital, take the white copy of your prescription to your GP who can
continue to prescribe them for you. You will be seen each week in the radiotherapy clinic where you can get these prescriptions, if needed.

Anyone with a cancer diagnosis is entitled to free prescriptions. If you do not already have a medical exemption card, you can get an application form from your GP, the Oncology Outpatient Department, or from Dimbleby Cancer Care. Please ask us if you need any further information.

What happens when treatment ends?
In the last week of treatment, you will see your advanced radiotherapy practitioner to review your side effects and discuss how to manage them during the weeks following completing radiotherapy. You will also see your oncologist if necessary. The side effects are likely to worsen during the first two weeks after treatment and then they will start to improve.

On the last day of treatment, you will be given a Treatment Completion Form summarising your treatment. We will send one copy to your GP and give you one for your own records.

Follow-up after treatment
Your oncologist will arrange to see you in clinic, four to six weeks following the end of treatment. The appointment will be sent to you in the post – please call 020 7188 4242 if you do not receive one.

This appointment is to check that you are recovering well and making progress with your rehabilitation.
In the long term, you will be followed up by your oncology team. This will be every three months for the first year, and then every six months for five years. This is to assess your recovery and response to treatment.

**Frequently asked questions**

**Where can I get advice on financial support during treatment?**
Please contact your key worker who will be able to provide advice on benefits. Alternatively Dimbleby Cancer Care offers a benefits advice service at Guy’s and St. Thomas’ (see details at the end of this leaflet).

**When can I go on holiday?**
It is difficult to predict your recovery from the side effects, but we recommend that you can go on holiday as soon as you feel well enough.

**When can I go back to work?**
Some patients continue to work throughout their radiotherapy treatment, while others may feel they need a few weeks break before returning. If you have had a long break from work, it may be advisable to plan a phased return, where you work shorter hours at first.

**Additional information**
In order to improve treatments and services, audits are regularly carried out in the department. This can involve using patient notes. Any data collected will have all personal details removed to ensure patient confidentiality. However, if this is unacceptable to you, and you would prefer that your notes are not seen, please let your consultant know and your wishes will be respected.
Clinical trials are undertaken within the department, which you may be eligible to take part in. If necessary and appropriate, your doctor will discuss this with you.

**Further information**

**Macmillan Cancer Support**
If you have questions about cancer, need support, or just want to chat, call the Macmillan Support Line for free.

* t: 0808 808 0000 (9am to 8pm, Monday to Friday)
* w: [www.macmillan.org.uk](http://www.macmillan.org.uk)

**Roy Castle Lung Cancer Foundation**
Aim to provide help and hope to anyone affected by lung cancer. Free nurse-led helpline on

* t: 0800 358 7200
* w: [www.roycastle.org](http://www.roycastle.org)  e: [info@roycastle.org](mailto:info@roycastle.org)

**British Lung Foundation**

* t: 08458 505020  w: [www.lunguk.org](http://www.lunguk.org)

**Cancer Research UK**

* t: 0808 800 4040 (freephone)
* w: [www.cancerhelp.org.uk](http://www.cancerhelp.org.uk)
Contact us

Dimbleby Cancer Care
Provides cancer support services for Guy’s and St Thomas’. We have a drop-in information area staffed by specialist nurses and offer complementary therapies, psychological support and benefits advice for patients and carers.

Located in the Welcome Village of the Cancer Centre at Guy’s.
**t:** 020 7188 5918  **e:** DimblebyCancerCare@gstt.nhs.uk

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<thead>
<tr>
<th>Service</th>
<th><strong>t:</strong></th>
<th>Details</th>
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<tbody>
<tr>
<td>Acute oncology assessment unit</td>
<td></td>
<td><strong>t:</strong> 020 7188 3754, 9am to 6pm, Monday to Friday</td>
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<tr>
<td>Benefits Advice Service</td>
<td></td>
<td><strong>t:</strong> 020 7188 5918</td>
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<tr>
<td>Emergency side effect care</td>
<td></td>
<td><strong>t:</strong> 020 7188 3754</td>
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<tr>
<td>Radiotherapy reception</td>
<td></td>
<td><strong>t:</strong> 020 7188 7188, extension 57542 or 57569</td>
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<tr>
<td>Radiotherapy bookings/CT scan/contrast injection queries</td>
<td><strong>t:</strong> 020 7188 3160</td>
<td>9am to 5pm, Monday to Friday</td>
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<td>Nutrition and dietetics department</td>
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<td><strong>t:</strong> 020 7188 4128, 9am to 5pm, Monday to Friday</td>
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<td>Speech and language therapy</td>
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<td><strong>t:</strong> 020 7188 6233, 9am to 5pm, Monday to Friday</td>
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<tr>
<td>Radiotherapy treatment support team</td>
<td></td>
<td><strong>t:</strong> 020 7188 4220, 8.30am to 5.30pm, Monday to Friday</td>
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Out of hours oncology doctor on call
**t:** 020 7188 7188 and ask them to contact the oncology doctor on call. Please have your hospital number ready. The switchboard operator will take your details and ask the emergency oncology doctor to phone you back. If you are concerned go to your local Emergency Department (A&E).
Contact us
Guy’s and St Thomas’ Smoking Association
Free NHS stop smoking service that provides expert advice and friendly support to help people stop smoking.
t: 020 7188 0995 e: stopsmoking@gstt.nhs.uk

Guy’s and St Thomas’ hospitals offer a range of cancer-related information leaflets for patients and carers, available at
w: www.guysandstthomas.nhs.uk/cancer-leaflets. For information leaflets on other conditions, procedures, treatments and services offered at our hospitals, please visit w:
www.guysandstthomas.nhs.uk/leaflets

Dimbleby Cancer Care provides cancer support services for Guy’s and St Thomas’. We have a drop-in information area staffed by specialist nurses and offer complementary therapies, psychological support and benefits advice for patients and carers.

Dimbleby Cancer Care is located in the Welcome Village of the Cancer Centre at Guy’s.
t: 020 7188 5918 e: DimblebyCancerCare@gstt.nhs.uk

Pharmacy Medicines Helpline
If you have any questions or concerns about your medicines, please speak to the staff caring for you or call our helpline.
t: 020 7188 8748 9am to 5pm, Monday to Friday

Leaflet number: 1695/VER8
Date published: November 2017
Review date: November 2020
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A list of sources is available on request