

## Lincoln radiotherapy pathway

This page gives an overview of the steps involved during your radiotherapy treatment. A substantial amount of work is carried out in preparation and planning to ensure that the treatment delivered is personalised to you, which ensures the most effective possible treatment is delivered.

### 1. Before treatment

#### How to find us?

The oncology department is located at the side of the main hospital. Please refer to the hospital map for further details.

#### Who will I meet?

You will meet a range of staff during your treatment in the oncology centre. These include:

#### **Therapy radiographers**

We have both male and female therapy radiographers who are trained to carry out your radiotherapy planning and treatment. As we are a teaching hospital, Student Radiographers may also be present.

#### **Radiotherapy helpers**

We have a small team of Helpers who will call you through from the waiting room each day for treatment. They are also trained to take your blood for test if that is needed.

#### **Consultant oncologists**

You may have seen your oncology doctor already in clinic but they will be on hand throughout your treatment if you need to see them.

#### Arranging transport?

If you are able to get to the hospital, either by car or by public transport, this is the preferred option. This is perfectly acceptable unless your doctor has advised you otherwise.

There are regular buses that come in to the hospital site, please visit the Stagecoach website for details.

If you have problems travelling from home each day, we may be able to offer help with transport. Please note that there are criteria for ambulance bookings, and you may not be eligible. If you use the ambulance service, you should be aware that you will be away from home for at least half a day. Transport is for the benefit of patients only and escorts may only be booked in exceptional circumstances; please discuss this with the staff.

## Smoking / nutrition / exercise?

If you currently smoke, then stopping smoking before you start your radiotherapy is one of the most important things you can do to help yourself. Smoking can worsen side effects from Radiotherapy and also limit the effectiveness of treatment.

There is help available to support you.

QUIT 51 Stop Smoking Service. Please ring 0800 622 6968

OR text 'smokefree' to 66777 to refer yourself to the service.

If you are unable to stop smoking completely then we advise stopping for two hours before and two hours after your treatment.

It is important to eat a well-balanced healthy diet with plenty of fluids while preparing for and having treatment. If you are having problems with your appetite or need any advice please speak to the staff.

Staying active is very important. The benefits of exercise are not just physical. Exercise can help lift your mood and help to alleviate fatigue. A gentle walk, gardening, or house work can help to keep you more active but it is important to listen to your body.

We advise against swimming while you are having radiotherapy due to possible skin irritation.

## 2. Arrival in department

### Parking?

There is free parking for all people attending for radiotherapy and chemotherapy. Our reception staff will validate your parking ticket each day as you leave the department.

If you park in the disabled car park, you will need to take your blue badge in to the main reception on your first visit and they will reimburse you. On subsequent visits (for treatment), the oncology receptionists will issue you a card with your treatment dates on it to display alongside your blue badge in the car.

### Reception

When you first arrive you will need to book in to reception and then a radiographer will come and explain what will happen and answer any questions you may have.

There is a coffee shop in the radiotherapy waiting area which sells sandwiches and snacks and there are also toilets. It is fine to eat or drink before or after your radiotherapy unless you have been advised otherwise.

If you are travelling by hospital transport you will need to book back in to reception once your appointment is complete, to organise transport home.

If you are not feeling very well, please let the reception staff know.

## **Consent**

Before you have any treatment, your doctor or a senior radiographer will discuss what the radiotherapy will involve including the benefits and risks of your proposed treatment. You will be asked to sign a consent form which is a written record that you have agreed to have the radiotherapy treatment and planning.

## **Pregnancy**

If you are female and below the age of 55 years, we will need to ask you to sign on the consent form that you are not pregnant. If you think you may be pregnant at any time during your course of treatment it is very important that you tell a member of staff immediately.

## **Pacemaker**

If you have a pacemaker or ICD (Implantable Cardioverter Defibrillator), please let your consultant or radiographers know as this is important when planning your treatment.

## **3. Treatment planning**

Your first appointment in the radiotherapy department will be a planning session. This will be in the CT scanner. The scanner gives a detailed picture of the area that needs to be treated, and enables us to produce an individualised treatment plan for you.

This scan enables us to plan exactly where you will have your treatment and the best position for you to lie in, for the most reproducible treatment. We work to an accuracy of millimetres and it is important that you are comfortable and can lie in the position for at least 15 minutes.

## **Tattoos**

You may need to have permanent dots (tattoos) made on your skin at this appointment, these help the radiographers position you in exactly the same position for each treatment. As these are permanent, we will ask your permission before we do this.

## **Mould room**

Some people undergoing treatment require an appointment in our mould room. This is where we can make any individual equipment required for your treatment.

We make a vast range of products in the mould room, some more common than others. The majority of the work involves making immobilisation shells and bolus.



### **Immobilisation shells**

Any patient who requires treatment to their head or neck area will need an immobilisation shell. These will vary in style and size depending on where we are treating. Shells are made from a thermoplastic material which means prior to your appointment a brand new shell will be placed into a heated water bath. The shells usually require heating for around 10 minutes before they are ready to use.

At your appointment a member of the mould room team will collect you from the waiting room (you are welcome to bring a family member or friend to this appointment) and take you into the simulator. The member of staff will explain how the shell will be made and this is also an opportunity for you to ask any questions you may have. Usually two members of the mould room team will be present for the shell to be made. We will ask you to lie on the couch and firstly check your head position and how comfortable you are. On some occasions we will make you a personalised headrest if we feel this will benefit you and your treatment.

Once you are ready to have the shell made one of the mould room staff will remove the mask from the water bath, swiftly dry it and then we are ready to shape it around your face. The shell will feel quite warm to the touch and we will mould it over your face and clip it into the bed. It is often described as feeling like a warm flannel over your face. In order to cool and mould sufficiently the shell needs to be left on for 10 minutes to harden. In this time keeping still is extremely important, the shell needs to form a snug fit to immobilise the area which requires treatment.

### **Bolus**

Bolus is a material which the mould room team fit specifically for each patient where required. The need for bolus will be identified at the planning stage, depending if the tumour is near to the skin. We have several different types of bolus, some will need to be heated and moulded in a separate appointment prior to starting treatment whilst others will be fitted at the start of your radiotherapy.

### **Planning details**

Radiotherapy treatment planning is one of the processes prior to treatment. It involves using the Planning CT scan and producing an external beam plan for radiotherapy or internal brachytherapy treatment. The process involves a whole team

of people consisting of therapeutic radiographers, oncologists, dosimetrists and physicists.

### **How is a treatment plan created?**

Using the CT scan your oncologist will draw contour around the tumour or area which requires radiotherapy. A margin will then be added around the outside of this contour to allow for organ motion and breathing, this is called a Planning Target Volume. The surrounding organs will also be drawn onto the CT so that we can check the doses to these structures at a later stage.

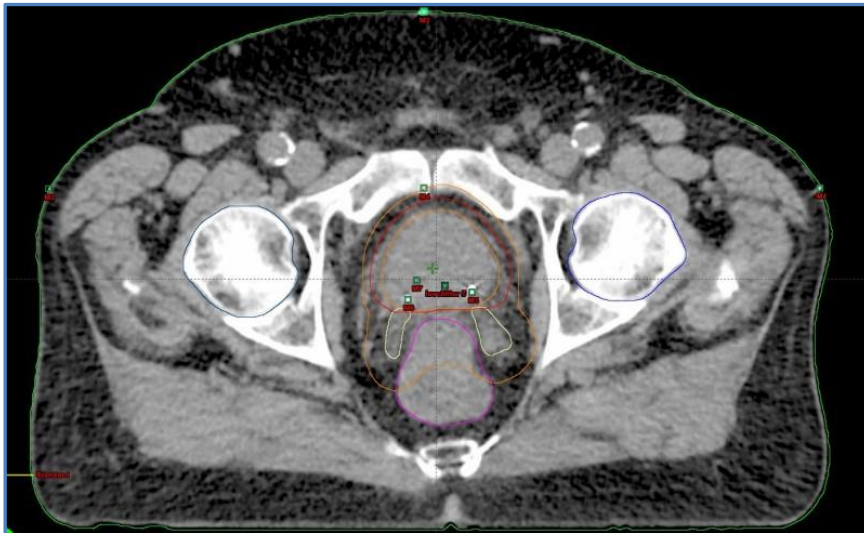


Image shows a prostate and seminal vesicles with a margin plus the rectum and femoral heads outlined.

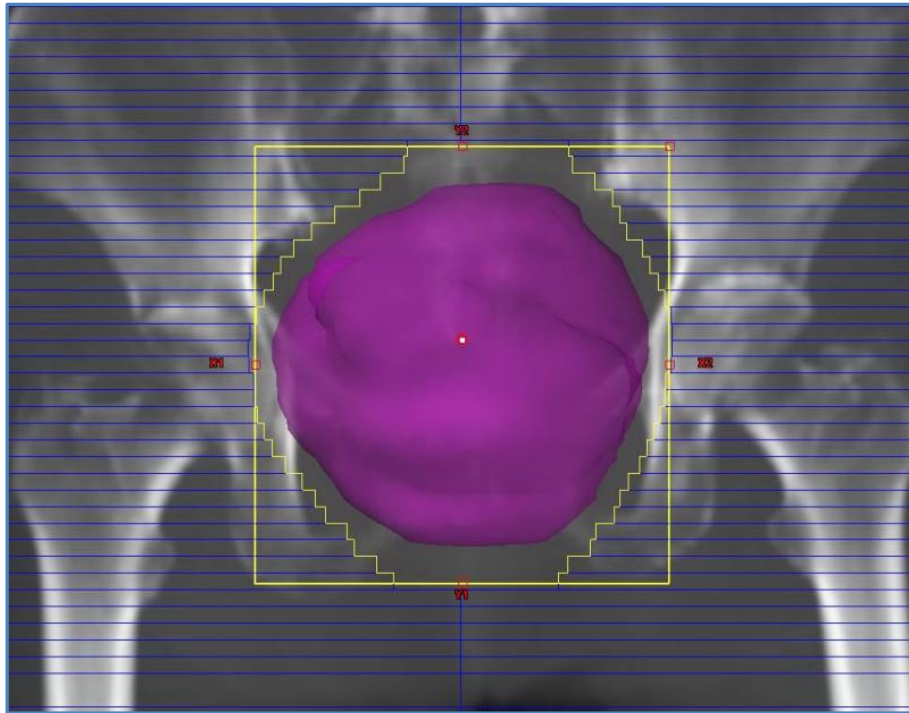
Using the structures on the CT scan a dosimetrist will apply a suitable plan depending on the treatment area. Every effort will be made to use fields that spare critical organs whilst maximising the dose to the tumour. The treatment planning system will calculate the doses using built in algorithms and the consultant together with the dosimetrists and physicists will review every plan.

### **What are the different types of treatment planning?**

#### **Conformal radiotherapy**

A common radiotherapy technique which involves covering a tumour with static treatment fields. The CT planning scan is used to determine the 3D volume of the tumour and normal tissues we want to avoid. Beams are placed around the tumour site and shaped using MLCs (multi-leaf collimators).

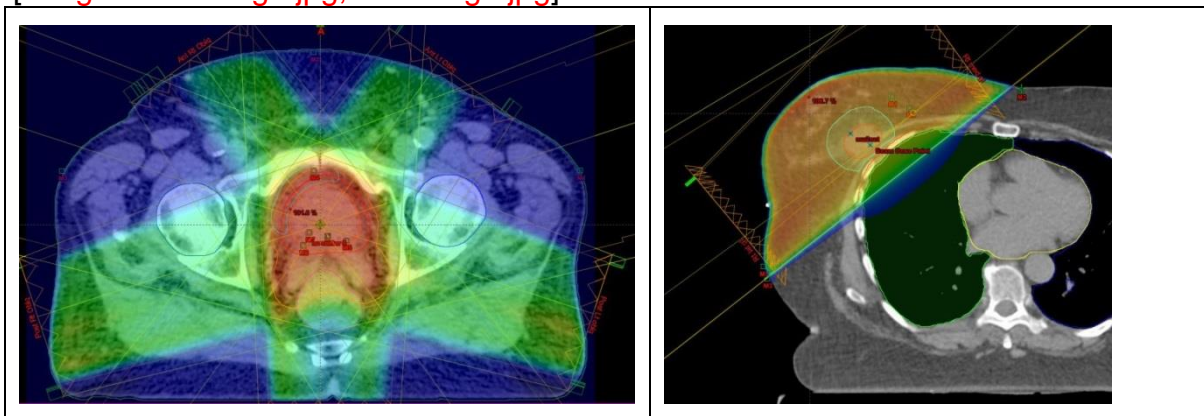




### **IMRT (Intensity-modulated radiotherapy)**

This radiotherapy technique is used to treat tumours which are in close proximity to important organs or structures. IMRT allows the machine to alter the shape of the beam throughout treatment delivery allowing different doses to be delivered to different areas. This can help with reducing immediate and long term side effects. Doses to tumours can also be increased when using this technique as the clinician has more control over where the dose is distributed within the body. IMRT is commonly used for both head and neck and pelvis radiotherapy, although it can be applied anywhere on the body.

[Images: Planning3.jpg, Planning4.jpg]



### **Links to further information:**

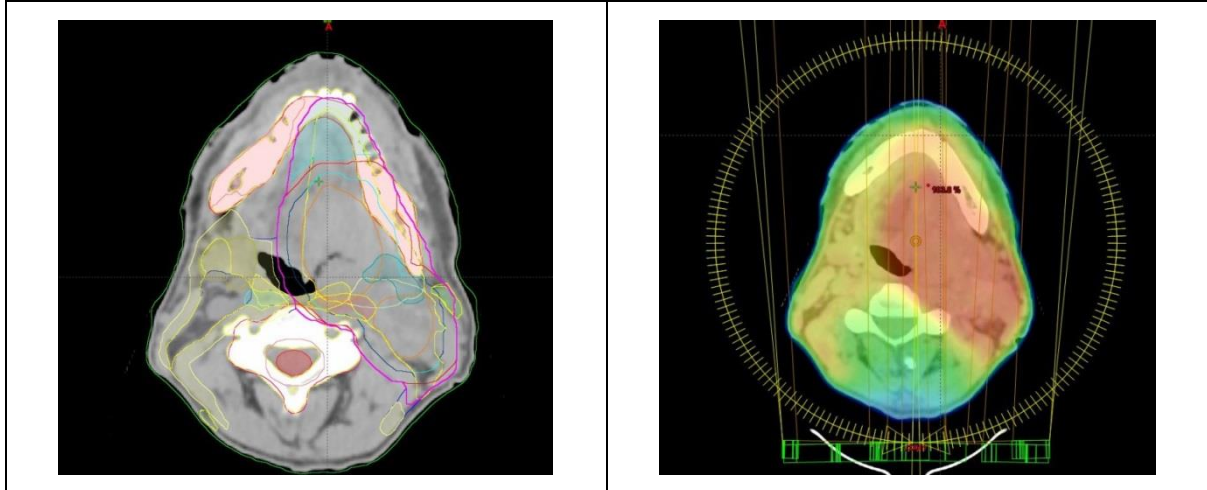
[http://www.cancerresearchuk.org/about-cancer/cancers-in-](http://www.cancerresearchuk.org/about-cancer/cancers-in-general/treatment/radiotherapy/external/intensity-modulated-radiotherapy-imrt)

[general/treatment/radiotherapy/external/intensity-modulated-radiotherapy-imrt.](http://www.cancerresearchuk.org/about-cancer/cancers-in-general/treatment/radiotherapy/external/intensity-modulated-radiotherapy-imrt)

<https://www.varian.com/oncology/treatment-techniques/external-beam-radiation/imrt>

## VMAT (Volumetric-modulated arc radiotherapy)

VMAT is the latest method of delivering IMRT, the machine is able to move continuously around the patient whilst the treatment is being delivered. This enables the clinician to have even more control over the distribution of the dose within the body.



### Links to further information:

<https://www.varian.com/oncology/treatment-techniques/external-beam-radiation/vmat>

## 4. Treatment

Treatment times vary depending on the area you are having treated. Treatment itself is very quick (minutes), and most of the time in the room is ensuring you are in the correct position and moving the machine.

The radiographers leave the room to treat you, but they can see you on closed circuit cameras at all time. It is important that you keep as still as possible for treatment and breathe normally. If you need the radiographers during your treatment, please raise your hand and they will come straight to you.

The treatment machine makes a buzzing noise while it works but there is nothing to see or feel from radiotherapy. You will not be radioactive after treatment, so it is safe for you to be with other people including children.

### Side effects

Radiotherapy affects people in different ways and you may experience different side effects to someone having similar treatment to you. Radiotherapy has a build-up effect and often people do not notice side effects at first as they can continue to worsen for 10 days after a course of treatment. Radiotherapy is a localised treatment which means only the area having treatment will be affected.

### Skin

As the treatment has to travel from outside the body through the skin, some patients may have a skin reaction. The reaction depends on the area being treated and can vary from a mild reddening, to itchiness or dryness and in some cases the skin can feel sore and peel. We tend to see worse reactions where there are natural skin folds or natural friction, for example: in the groins, under the arm and under the Breast.

The skin reaction is not affected by any specific soaps or creams and we advise you to carry on with your normal skin care routine as you know the products that suit your skin. You can use your normal soap, shower gel, deodorant and body lotions but speak to the staff if you have any concerns.

We do ask that you avoid:

- Medicated or antibiotic creams
- Wet shaving
- Waxing
- Extremes of temperature (sunlight, ice packs, hot water bottles)

### **Fatigue**

You may feel tired or lethargic during your radiotherapy treatment and for a number of weeks after your treatment has finished. This lethargy can also affect your emotions/mood and many people report feeling more emotional during treatment and for some weeks afterwards.

Keeping active can help combat fatigue but it is important to listen to your body and if you feel unwell to rest.

Drinking plenty of fluids and eating well can also help.

You will be seen once a week by a radiographer or your consultant.

A minority of patients may have permanent side effects. The likelihood of this will be discussed with you before you agree to start your treatment.

### **5.After treatment**

You will be seen by your consultant between 4 to 8 weeks after completing your treatment. This appointment will be where you originally were seen ( i.e. not always in Lincoln).

You will be given a finishing letter on your last day which advises that the treatment effects will continue for a week to ten days after treatment. It is normal for side effects to worsen slightly during this time as the treatment reaches its peak. The finishing letter also has all of the doctor's secretary's telephone numbers, so that you can contact them directly about appointments. At the bottom of the letter is a telephone number for the radiotherapy department. This number is for any queries or concerns between finishing your radiotherapy and your first follow- up appointment and a radiographer will call you back to offer advice.

### **Care in the sun**

After radiotherapy, the area treated will always be more sensitive to the sun. We advise keeping the area out of the sun/covered for the first year following radiotherapy and always wearing a high factor /sunblock / wide brimmed hat in subsequent years. You should not use a sun bed.



## Nausea

Some radiotherapy can make you feel sick. It can be helpful to try foods with ginger in them for example; ginger biscuits, ginger beer or stem ginger. Peppermint products can also help and we can also organise medication if needed.

## Hair loss

Unfortunately you may lose your hair in the area being treated. This normally happens two to three weeks after starting radiotherapy. Hair loss can be permanent or patchy and can take four to five months to re-grow. Some people prefer to wear a hat or a scarf but many people decide to use a wig. There is a wig bank available at both Lincoln and Grantham hospices. This is a free service and includes styling by a hairdresser.

For further details contact:

- Lincoln: (01522) 518219
- Grantham: (01476) 513545

You can also purchase your own wig via the hospital. We will give you a referral form and a letter with a choice of approved provider. This will cost £67.75, and the wig is fitted and styled for you.

## Medications

### **Steroids**

For head and neck patients, it is common to have steroids as part of your treatment. Steroids are used to help reduce swelling and pressure. It is likely that you will remain on your current steroid dose whilst on treatment, as radiotherapy can also cause some swelling and inflammation in the treatment area.

Please let staff know if you are having any headaches, nausea, visual disturbances or limb weakness (feeling sick) as sometimes your steroids may need adjusting during treatment.

### **Temozolamide**

You may be taking this chemotherapy tablet daily as part of your treatment. Your doctor or specialist nurse will advise you how to take this and about any side effects. You will also need weekly blood tests as this tablet can affect your normal blood levels.

### **Seizures or fits**

You may already have been experiencing seizures or fits, which are now controlled by an anti-epileptic medication. It is important to continue this medication but be aware that radiotherapy to the brain can cause the return or increased frequency of seizures or fits. This is because radiotherapy causes inflammation or swelling as it works. Please continue with your medication and let staff know of any changes you have noticed.

## Specific side effects

### **Bowel symptoms**

For bowel or pelvis treatment, after the first couple of weeks your bowel habits may change, for example your stools may become loose or you may develop diarrhoea. If this happens tell your radiographer and medication can be prescribed for you. During treatment you may suffer from lower abdominal pain or discomfort. Again tell your radiographer or doctor who may prescribe some pain relief or specialist medication to ease this.

After three or four weeks of treatment you may notice some discomfort on opening your bowels. This is called proctitis and is caused by inflammation in the back passage.

### **For ladies**

For gynaecological treatments you may notice an increase in vaginal discharge and have some discomfort and tightness. You will have a feminine care appointment during your treatment. At this appointment a radiographer will talk to you about using vaginal dilators and you will be given a set.

### **Bladder changes**

For some bladder patients after radiotherapy you may notice that you have to pass urine more frequently, and a small number (4%) of patients develop urinary incontinence as a result of radiotherapy.

Some gentlemen find they have difficulty passing urine. This is because the tube carrying the urine from the bladder to the penis (urethra) can become narrower (stricture) due to the treatment. Please speak to your doctor if you notice any changes.

You can notice a little blood in your urine or your motions. This is because radiotherapy can cause the development of small blood vessels in the area treated and these blood vessels can bleed more easily.

### **Sexual function**

After radiotherapy, 40-60% of gentlemen report significant changes to their sex life. This includes problems getting and maintaining an erection and lack of sex drive (libido). Please try not to be embarrassed and talk to your doctor. They can tell you about different ways to help, such as medication, practical solutions and counselling.