

## TomoTherapy

Your radiotherapy will be carried out using TomoTherapy technology. This guide gives you a basic introduction to TomoTherapy and explains how it will be used in your treatment.

### What is radiotherapy?

Radiotherapy is the use of high energy X-rays to destroy cancer cells. Radiation cannot be seen and is entirely painless. Treatment is generally given as a course over several weeks. Each daily treatment can take 20 to 30 minutes.

### What is TomoTherapy?

TomoTherapy is a very accurate way of treating cancer with radiation. It combines three elements into one integrated system:

- Treatment planning – a customised plan for each patient.
- Image-guided radiotherapy (IGRT) – an built-in CT scanner allows us to accurately locate the tumour before each radiotherapy treatment.
- Intensity-modulated radiotherapy (IMRT) – a high dose of radiotherapy is given to the precise area of the tumour.

The equipment used for TomoTherapy looks similar to a CT scanner. You will lie on a couch that moves continuously through a large rotating ring. Inside the ring is a linear accelerator which delivers radiation in lots of little beamlets. With the couch moving at the same time as the ring is rotating, the radiation beamlets emerge in a spiral (or helical) pattern and target the tumour from all angles.

The main benefit of TomoTherapy is that the radiation can be very accurately targeted. The CT scan taken before each treatment gives us very clear picture of the exact location of the tumour. This allows us to draw a tighter margin around the tumour, and target the radiotherapy more precisely than would otherwise be possible.

The radiation is delivered via lots of little beamlets coming from all angles, rather than through fewer larger beams. This means the high dose radiation can be precisely concentrated on the tumour, avoiding surrounding healthy areas.

## The therapy process

### Your first visit

Your first visit will be to plan your treatment. If you have any previous scans then it is important to bring these with you, along with any other information your oncologist may ask for. You should allow about one and a half hours for this appointment.

Before treatment can begin, we need to establish the exact part of your body where the radiotherapy will be given. This involves getting you to lie in a position that we can reproduce daily (using an immobilisation aid if necessary). You will then have a CT scan. This gives us the image

necessary to plan your treatment accurately. Finally, you may need small reference marks made on your skin. These are covered in more detail below.

### **Immobilisation aids**

All immobilisation aids are simply to help you stay in a stable position that can be reproduced each day. They are designed to your individual needs.

Examples of two immobilisation devices are:

- Vac bag immobilisation - This can be used to immobilise a limb or to support the arms and shoulders for treatment of the chest or abdomen. The vac bag contains tiny polystyrene balls and as you lie on the bag, an indent is made in the balls. The air is then removed and the bag is left moulded to your shape.
- Thermoplastic immobilisation - This is mainly used when treating the head and neck. The radiographer will ask you to lie on your back with your head and neck supported on a plastic rest. A warm thermoplastic material is placed over your face and neck, and moulded to your shape. It's important that you stay still as the material cools and solidifies. The mask has holes in it to allow you to breathe normally when it's worn. The procedure takes approximately 10 minutes.

### **CT planning scan**

The position you lie in for the CT planning scan will need to be repeated for all your treatment sessions. It's important that you tell the radiographer if you feel any discomfort in this position. Your radiographer will ask you to remove any clothing from the treatment area.

For scanning purposes only, it may be necessary to give you an injection of a special dye (contrast medium). This helps the planning team see specific structures more clearly. The planning radiographer will put temporary markers on your skin at specific positions. These show up on the CT images and help your planning team to take accurate measurements. The whole CT scan process should take no more than 30 minutes.

You will be alone in the room for approximately five minutes while the scan is being performed. The radiographer will be able to see you at all times so raise your hand if you need any assistance. You shouldn't feel any pain or discomfort during the scan, but you will feel the couch moving and hear the machine working. It's very important that you keep still, relax as much as possible, and breathe normally during the scan. If you feel tense or anxious please ask us to wait until you are happy for us to proceed.

### **Reference marks**

At the end of the scan, the planning radiographer may ask if he or she can make small reference marks on your skin. These are used to make sure you are in exactly the same position each day. The marks are made by piercing the skin surface with a needle which contains a small amount of ink. The blue/black colour marks are permanent but they are very small.

Permanent reference marks may not be needed if an immobilisation device is used. Your radiographer will answer any questions you have about these marks at your planning appointment. Any marks made on your skin with felt tip pen may be removed when you get home.

## **After your planning scan**

The radiographer will take your photograph (with your permission). This will be used as a method of identification during treatment and for no other purposes. Your oncologist will talk to you about the treatment and will explain any short or long term side-effects that may affect you. He or she will also ask you to sign a consent form.

Finally, you will be given an appointment for your first treatment. We will try to make your appointment for a time that suits you best. However, this may not always be possible. If an alternative time becomes available at a later date, you will be able to change your appointment. All of your future appointments and instructions will be given to you at your first treatment appointment.

## **Your first treatment**

On the first day of treatment we will give you detailed information and advice about all aspects of your treatment and care. The treatment itself usually takes about 20 to 30 minutes. You will need to keep very still for this. Before you leave, we will give you a schedule for your future appointments.

## **A friendly and caring environment**

You will be treated in a pleasant and comfortable environment and can expect:

- Detailed information and advice on all aspects of your care.
- Appointment times that wherever possible meet your needs.
- Staff who take time to explain the procedure and answer any questions you have.
- A team that works together to make sure you experience as little discomfort as possible during your treatment.
- A comfortable waiting area with facilities for relatives and friends.

While you're having treatment, you will also see your oncologist once a week.

## **Support and care services**

Radiotherapy treatment at Bupa Cromwell Hospital also includes eight counselling sessions. These are available for all patients and relatives. In addition, patients can be referred to one or more of our cancer centre support services:

- Specific services for example a breast care nurse or our lymphoedema service.
- Nutrition and dietary advice.
- Oncology physiotherapy.
- Massage therapy.
- Alternative therapies for example clinical Pilates, acupuncture and hypnotherapy.

## **Contact**

If you have any questions about your radiotherapy planning please contact the planning radiographers on +44 (0)20 7460 5635.

For any questions about your future treatment, please contact the treatment radiographers on +44 (0)20 7460 5623/5633.

If you have any other questions then contact the Radiotherapy department on +44 (0)20 7460 5626/7. If the Radiotherapy department is closed, contact the Oncology ward on +44 (0)20 7460 5994.

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