



The Clatterbridge  
Cancer Centre  
NHS Foundation Trust



# Deep Inspiration Breath Hold technique for Lymphoma patients

Radiotherapy



**A guide for patients and carers**

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This leaflet is for patients having radiotherapy to the central chest as part of their treatment for Hodgkin or Non-Hodgkin Lymphoma using the Deep Inspiration Breath Hold technique. This leaflet is designed to be read alongside The Clatterbridge Cancer Centre Radiotherapy patient leaflet.

## What is the Deep Inspiration Breath Hold (DIBH) technique?

Deep Inspiration Breath Hold technique, or DIBH for short, is a technique whereby you hold your breath for up to 30 seconds at a time during radiotherapy treatment.

### Why we use DIBH?

The action of holding your breath inflates your lungs and pushes your heart downwards within the chest. The heart therefore moves away from the area being treated with radiotherapy and your heart and lungs receive less radiation.

### What do I need to do to prepare for DIBH?

You will need to be able to take a deep breath in and hold it for 20-30 seconds. We recommend you practice at home, by holding your breath a few times a day for as long as possible, for several days before attending your planning appointment. Practice will help to improve your confidence and enable you to hold your breath longer.

Please do not worry if you are not able to hold your breath as required, treatment will still be given using your normal breath. We will still aim to spare as much of your heart and lungs from the radiation as possible.

## Radiotherapy planning

Radiotherapy planning is completed as an outpatient at Clatterbridge Cancer Centre - Wirral. Radiotherapy planning involves a CT scan of the chest, as you have had previously. The CT scan is taken in the same position as you will be in for the actual radiotherapy treatment and is necessary to work out exactly how and where to give radiotherapy. It is used by the radiotherapy team to prepare the treatment plan.

You will be taken to the room with the CT scanner, where you will spend 15-20 minutes. You will have a private space to remove jewellery and clothing from your waist up to your chin.

## Intravenous (IV) contrast injection

If you have normal kidney function and no allergies to IV contrast, you will be given this during the scan. (It is important to inform the radiographer if you have had a reaction to IV contrast previously). This is a contrast dye, which allows blood vessels to be seen more clearly on the CT scan to help your cancer doctor plan your treatment. If you are having contrast dye - a small needle will be inserted into a vein in your arm before your scan so the dye can be injected. You will be asked to wait for about 30 minutes after the scan in the waiting area.



## Planning CT scan

We will ask you to lie on the scanner couch with your arms above your head. Your head and arms will be supported by a special board and you will have a bar to hold on to. A radiographer will be in the room with you to help you get into the right position. Before the scan (which takes less than 30 seconds), we will help you to practice your breathing as required, by asking you to hold your breath a few times for up to 30 seconds. A special camera monitors your breathing with the help of a sensor (a small plastic box 6.5 x 3x3cm) which is placed on your chest.

## Immobilisation cast

Very occasionally, if you are having treatment to the neck and the chest, an "immobilisation cast" is required. This means your arms will be down by your side and the cast will keep your head and shoulders still. The cast will be made at your planning appointment (before your scan). You will be given all the information on how the cast is made, if this applies to you.

## DIBH

After a few practice breath-holds, we will provide you with a small TV screen which will be attached to the board you are resting on. The screen shows you a picture of your breathing. The pictures on page 5 of this leaflet show what you will see. It is important that you take in a big breath to expand your lungs, and you will need to be able to repeat this during every treatment. During the practice time, the radiographers set the height of the blue area (which can be seen in the first picture on page 5). This is your

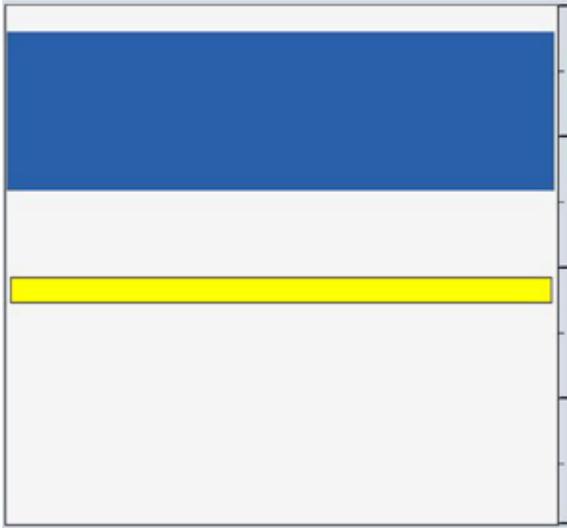
chest position when you take a big breath and hold it. The display will help you to see if you are taking the right amount of air into your lungs.

- The yellow bar shows the movement of your chest and will move up and down as you breathe in and out
- When you take a deep breath in, the yellow bar should move into the blue area and the yellow will then change colour (green)
- When you breathe out again, the bar will fall below the blue area and turn yellow
- When we are ready to do the scan, we will ask you to hold your breath; the scan will start when the bar has changed colour

When the scan has finished, we will tell you to breathe normally.



This is the view you will see on the screen



This image shows the screen view of someone taking a breath to hold:



**Normal breath  
position**



**Taking in  
a breath**



**Holding  
the breath**

## Appointments for treatment

A member of the booking desk team will contact you within three working days of having your planning scan to arrange your first radiotherapy appointment. You will receive the remainder of the appointments on your first day of treatment. Your radiotherapy will start about 10 days after the planning appointment.

Your radiotherapy treatment will be at Clatterbridge Cancer Centre - Wirral, in the same building where you attended for planning. We are unable to offer this treatment at Clatterbridge Cancer Centre - Aintree. The treatment will be daily on weekdays and appointments are for 15 minutes. Please be prepared to spend somewhere between 1/2 and 1 hour in the centre each day. At your first treatment session, we will explain the process. You can ask us any questions at this point or raise any matter you need to discuss.

## Your radiotherapy sessions

### Treatment preparation

We will ask you to undress the upper part of your body, however, we will cover you up as much as possible. The radiographers will help you onto the treatment couch, the room lights will be dimmed and you will be placed into the same position as you were when you had your planning CT scan. This can take a few minutes and the radiographers often need to talk to each other, rather than you, to ensure you are in the correct and safe position. Please try to lie still and relax.



Once you have been positioned on the treatment couch, we will ask you to hold your breath several times. When the radiographers are happy with your breathing pattern and have finished their checks, the screen will be switched on, and they will inform you they are ready to leave the room.

### **Cone beam CT scan (CBCT)**

A special CT scan is required to be taken before we deliver your treatment, to check your position. This scan is called a cone beam CT, or CBCT for short. The scan is taken using special equipment attached to the treatment machine, with you in the treatment position and using the DIBH technique.

Please lie still and breathe normally. The radiographers will talk to you, via the intercom system, to let you know when they are ready to begin the scan. Once ready they will ask you to take a deep breath in and hold. At this point watch the screen and take your breath in so the yellow bar moves into the blue box as it did at your planning scan. The yellow bar will then turn green. This is the signal for the scan to start. Hold your breath for as long as you can and then breathe out. The scan will then stop. When you feel ready, breathe in again and the scan will restart as before. The scan takes 60 seconds so it will probably take 2 to 4 breaths to complete. The machine will rotate around you and make a buzzing noise. We will explain this process in full to you when the scan is required.

Once the scan is finished, the radiographers will instruct you via the intercom to breathe normally. It takes just a few minutes to analyse the CBCT scan and this is done while you are on the bed. You will be asked not to move whilst you wait. A slight adjustment may be required and if so, you may feel the bed move a little.

## **Treatment**

You will be asked to lie still and breathe normally until the radiographers tell you they are ready to begin the treatment. They will ask you to take a deep breath in, as you did for the planning CT scan and the CBCT scan. You will be asked to hold your breath for as long as is comfortable then breathe out using the screen to guide you. The machine will turn on and deliver the radiotherapy once you are holding your breath. You will need to take a number of breaths during the treatment as it will take a few minutes to deliver. The radiographers will instruct you to breathe normally once the treatment has finished.

Please remember that you cannot make the machine treat you incorrectly. If your breath has not raised the bar high enough, the treatment machine will not turn on. Also, if you need to cough or breathe out, then the machine will automatically switch off. The radiographers will also monitor you the whole time. They can see and hear you through CCTV cameras and will help guide you through the procedure. Once the treatment session is over, a member of the team will come to help you get off the couch and take you to the changing room. You will then be free to leave the hospital.



## Additional information

### **The Clatterbridge Cancer Centre NHS Foundation Trust**

[www.clatterbridgecc.nhs.uk](http://www.clatterbridgecc.nhs.uk) or 0151 556 5000

If you have any questions before starting your treatment, please contact the Information & Support Radiographer at Clatterbridge Cancer Centre - Wirral, Monday to Friday (9am-5pm) on **0151 556 5314**.

### **The Clatterbridge Cancer Centre Hotline 0800 169 5555**

If you are unwell during, or up to 6 weeks following your cancer treatment, please call The Clatterbridge Cancer Centre hotline.

Your call will be answered by a dedicated nurse advisor. This line is available 24 hours a day, 7 days a week.

If you would like more detailed information on radiotherapy for Lymphoma or on the side-effects from the treatment, please refer back to the Radiotherapy leaflet on the lymphoma website ([www.lymphomas.org.uk](http://www.lymphomas.org.uk)). Alternatively contact the Information & Support Radiographer or visit our website **[www.clatterbridgecc.nhs.uk](http://www.clatterbridgecc.nhs.uk)**.

If you need advice regarding financial issues, we can arrange for you to see our Macmillan Welfare Benefits advisor.

### **Macmillan Cancer Support**

0808 808 0000 or [www.macmillan.org.uk](http://www.macmillan.org.uk)

### **Macmillan Cancer Information and Support at**

**Clatterbridge Cancer Centre - Wirral** 0151 556 5570

**Clatterbridge Cancer Centre - Aintree** 0151 556 5959

## How we produce our information

All of our leaflets are produced by staff at The Clatterbridge Cancer Centre and this information is not sponsored or influenced in any way. Every effort is made to ensure that the information included in this leaflet is accurate and complete and we hope that it will add to any professional advice you have had. All our leaflets are evidence based where appropriate and they are regularly reviewed and updated. If you are concerned about your health in any way, you should consult your healthcare team.

We rely on a number of sources to gather evidence for our information. All of our information is in line with accepted national or international guidelines where possible. Where no guidelines exist, we rely on other reliable sources such as systematic reviews, published clinical trials data or a consensus review of experts. We also use medical textbooks, journals and government publications.

References for this leaflet can be obtained by telephoning 0151 556 5570.

If you need this leaflet in large print, Braille, audio or different language, please call 0151 556 5570.

**If you have a comment, concern, compliment or complaint, please call 0151 556 5203.**

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