



University Hospitals Birmingham
NHS Foundation Trust



Deep inspiration breath hold - DIBH

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This leaflet is for patients who are offered radiotherapy using the Deep Inspiration Breath Hold technique (DIBH). This technique is mainly used to treat the left breast or chest wall and this leaflet is designed to be read alongside our patient guide to breast radiotherapy leaflet. DIBH can also be used for certain chest radiotherapy techniques.

What is deep inspiration breath hold (DIBH)?

The DIBH technique is a method of delivering radiotherapy whilst you are holding your breath.

Why should I have DIBH?

The main use of a DIBH technique is for patients having their left breast/chest wall treated. This is because the heart is situated behind the left breast and chest wall.

By taking a breath in and holding it, your lungs fill with air and expand. This creates a gap between your heart and your breast/chest wall.

In many people this is helpful as we can now treat your left breast or chest wall whilst minimising the dose to the heart.

All patients with left sided breast carcinoma are considered for the DIBH technique. Your clinician will not know how close your heart is to the area of treatment until after your radiotherapy CT planning scan. It will be decided at this point whether the DIBH technique is appropriate

Are there any alternatives?

The alternative to DIBH is to have radiotherapy whilst breathing normally. Even when breathing normally, your heart may not be close to the treatment area but this can be difficult to assess as everyone is a different size, shape and has different internal anatomy.

You should not worry if you are not receiving a DIBH technique as there are different methods available to ensure the dose to the heart is minimised.

You may decide that you do not want to be treated using the DIBH technique. This is an option you can choose and you will be able to discuss this at your radiotherapy planning CT appointment.

What are the risks?

There are no risks associated with DIBH.

What will I need to do?

In order to receive the DIBH technique, you need to be able to take a deep breath in and hold it for 25 seconds. You will need to be able to do this several times, and each breath hold needs to be consistent. We will give you breaks between breath holds so that you can catch your breath each time.

How can I prepare for DIBH?

The week before coming to your radiotherapy CT planning appointment, it is a good idea to practice holding your breath for 25 seconds. Practice this three or four times in a row, a few times a day. You should find it will help to improve your ability to achieve a large breath hold and also increase your confidence in doing so. You should practice this lying down as this is the position you will be in for your radiotherapy.

When practising your breath hold, it is important to ensure that you do not arch your back or tense/hunch your shoulders. Try to remain as relaxed as possible during the breath hold. The radiographers will help by coaching you during your breath holds.

If you decide that you do not want to be treated using the DIBH technique then you will be able to discuss this at your radiotherapy CT appointment.

What can I expect at my planning CT scan appointment with DIBH?

We will explain the scan procedure before we begin.

You will be asked to remove all of your upper clothing and wear a special gown for the duration of the appointment. You will need to lie on the CT scanner couch in the preferred treatment position.

We will coach you in to a 25 second breath hold and observe you during this time. We will then advise you on any changes that need to be made for the next breath hold. Do not worry about these changes – it takes most people a few attempts to achieve the desired breath hold.

Once you are happy with the procedure, we will carry out some more practice breath holds and give you a rest between each one. We will continue to coach you when necessary. Once we are happy that you are achieving consistent breath holds, we will proceed with acquiring the CT scan.

We perform 2 CT scans for patients receiving a DIBH technique. An initial scan will be carried out whilst you are breathing normally. The scan will then be repeated whilst you hold your breath as we have practiced. The radiographers will speak to you through an intercom and tell you when to breathe in and when to breathe out. You will be holding your breath for approximately 25 seconds.

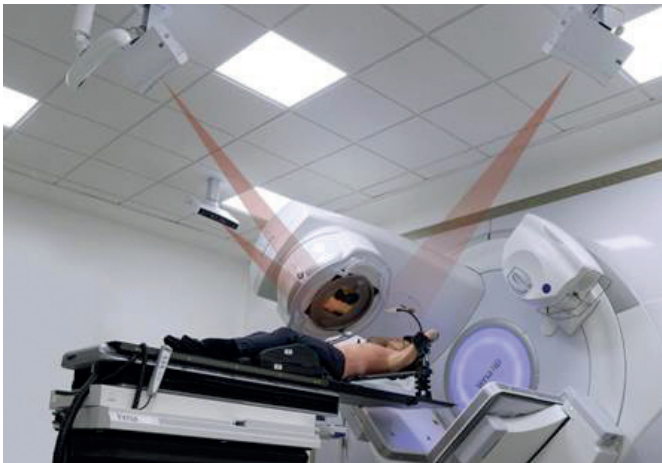
If you are unable to hold your breath for 25 seconds or we see inconsistent breath holds, then DIBH may not be appropriate. You should not worry if you are not receiving a DIBH technique as there are

other methods available to ensure the dose to the heart is minimised. The CT scan procedure takes about 40 minutes.

What happens during your treatment appointment with DIBH?

When you attend for your radiotherapy treatment, we will use some cameras mounted to the ceiling to help you reach exactly the same breath hold that you achieved during the CT planning appointment. This camera system only monitors your position, it does not record you. The system is called AlignRT.

You will need to lie in the same position that you were in during the CT planning appointment and a red light will be projected on to your chest area. The cameras on the ceiling use this red light to monitor you and help us get you into the correct position. Once the radiographers are happy with your position, they will ask you to take a deep breath in.



During treatment you will also be able to see a small screen (figure 1) which will show you how deep you need to breathe. Most patients find this visual aid helpful when holding their breath. The screen will be positioned in front of you so you can easily see the picture.

The yellow bar represents your current breathing level and the white bar represents where your breath hold need to be. As you breathe in, the yellow bar will move upwards and will need to reach the white breath hold zone (figure 2).

Once you achieve the desired level and the radiographers have adjusted the treatment couch, the bar will be in the white breath hold zone and will turn green. This indicates you are now in the correct position (figure 3). The radiographers will also tell you when to breathe in, when to hold your breath and when you can breathe normally again.

Figure 1



Figure 2

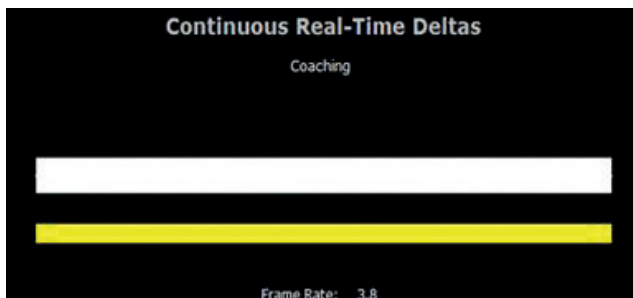


Figure 3



To complete your daily radiotherapy session you will need to go in and out of breath hold several times. Some of these breath holds will be with the radiographer in the room with you as they perform their checks. Some of the breath hold instructions will be via an intercom system when the radiographers leave the room to deliver the radiotherapy. Do not worry if you need to breathe normally earlier than the radiographers say, as if your breath hold leaves the white breath hold zone on the screen in front of you, the radiotherapy will automatically stop.

You will be given resting periods during the treatment to ensure you don't get too tired or out of breath.

The radiographers will also be monitoring you the whole time, can see and hear you and will help guide you through the procedure.

The treatment procedure takes about 15–20 minutes

Will I feel anything during DIBH?

You will not feel anything with this technique.

CCTV monitors

The treatment rooms are monitored during your preparation for treatment, positioning and treatment delivery by television cameras. This is part of ensuring the accuracy of your treatment and your safety and wellbeing in the rooms at all times. We assure you that the camera image feed is live and it is not possible to make a recording.

The images are viewable on screens situated in the machine control areas. The control areas are only accessible by authorised radiotherapy staff, some of whom may not be directly involved with your care. If you have any concerns about your privacy or dignity that have not already been discussed, please do not hesitate to highlight your concerns during the information discussion with the radiographers at your first treatment appointment.

Other useful sources of information

Please refer to the leaflet, **Patient guide to Breast Radiotherapy leaflet** for further information. If you have not been given a copy, and would like one, please ask us.

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