



Information for  
patients and  
carers

**Breath Hold Radiotherapy for SABR  
(Stereotactic Radiotherapy)**

## Introduction

The following guide has been written for patients due to receive breath hold radiotherapy at Rosemere Cancer Centre.

This guide provides a basic overview of what breath hold radiotherapy is, why it is used and how it is delivered. It also details the equipment required and gives instruction on how patients can prepare for treatment.

Breath hold is a radiotherapy technique that involves delivering radiation to treat a cancer site when the phase of your breathing cycle reaches a defined point. What this means is that you hold your breath for a short duration while your radiotherapy treatment is delivered, and then resume normal breathing.

During a treatment session this process will be repeated up to 20 times using specialised medical equipment to monitor and help regulate your breathing. The length of time you will need to hold your breath is a minimum of 20 seconds. You may be asked to hold your breath during the inhalation or exhalation phases of your breathing cycle. We would suggest practising at home prior to your appointment.

When you hold your breath, your diaphragm (breathing muscle) is no longer moving up and down and therefore the movement of your lungs, liver and heart is reduced. This reduction in motion helps the Therapeutic Radiographers obtain a more accurate picture of where your anatomy is positioned for your Radiotherapy. A treatment plan can then be designed and delivered which targets your cancer site while minimising radiation exposure to healthy organs. This can be particularly useful when treating cancers in the chest or abdominal area.

When you attend Rosemere Cancer Centre for your radiotherapy, several steps need to be completed before you can receive treatment using the breath hold technique. One of the first steps is attending a coaching session in the radiotherapy department.

At this appointment you will be taken into a CT scanning room and taught the correct breathing technique for treatment using a device called the Active Breathing Coordinator (ABC) system.

From a patients' perspective, the ABC system looks similar to a swimming snorkel. It has a rubber mouthpiece, connected to a flexible tube, and a foam peg to block your nose. This design ensures that breathing only happens through your mouth.



When you breathe through the mouthpiece the device measures the amount of air you breathe in/out, which is then displayed on a computer screen. This allows the amount of air you breathe in/out and hold for treatment to be precisely set by the Therapeutic Radiographers. It is

important to realise that the ABC system does not control your breathing. It only helps regulate the volume of air you breathe in or out and the length of time you hold your breath for.

You can still breathe at any stage by simply releasing a handheld button (patient control switch). This means that you have full control over when you start holding your breath and for how long.



To set up for your coaching session the Therapeutic Radiographers will ask you to lie down on the CT couch in a position that is suitable for your planning and treatment.

You will then be given a foam peg to put on your nose and a mouthpiece to place between your teeth. You must ensure you can maintain a good seal on the mouthpiece.

At this point you should only be breathing through your mouth, with all your breath directed through the snorkel and none leaking from the sides of your mouth or nose.

This will ensure that the ABC system obtains an accurate measurement of how much air you breathe.

If you think your nasal passages are not sealed by the peg or you are having trouble breathing through your mouth, please tell the Therapeutic Radiographers as they may need to adjust the equipment to better fit your individual needs.

As you breathe your lung volume is traced in real time on a computer screen.

From this information a threshold is set for your lung capacity. The threshold is the amount of air that you will need to breathe in/out and hold for treatment. This can be adjusted if you feel uncomfortable.

Once this value has been recorded, the Therapeutic Radiographers will commence your breath hold coaching.

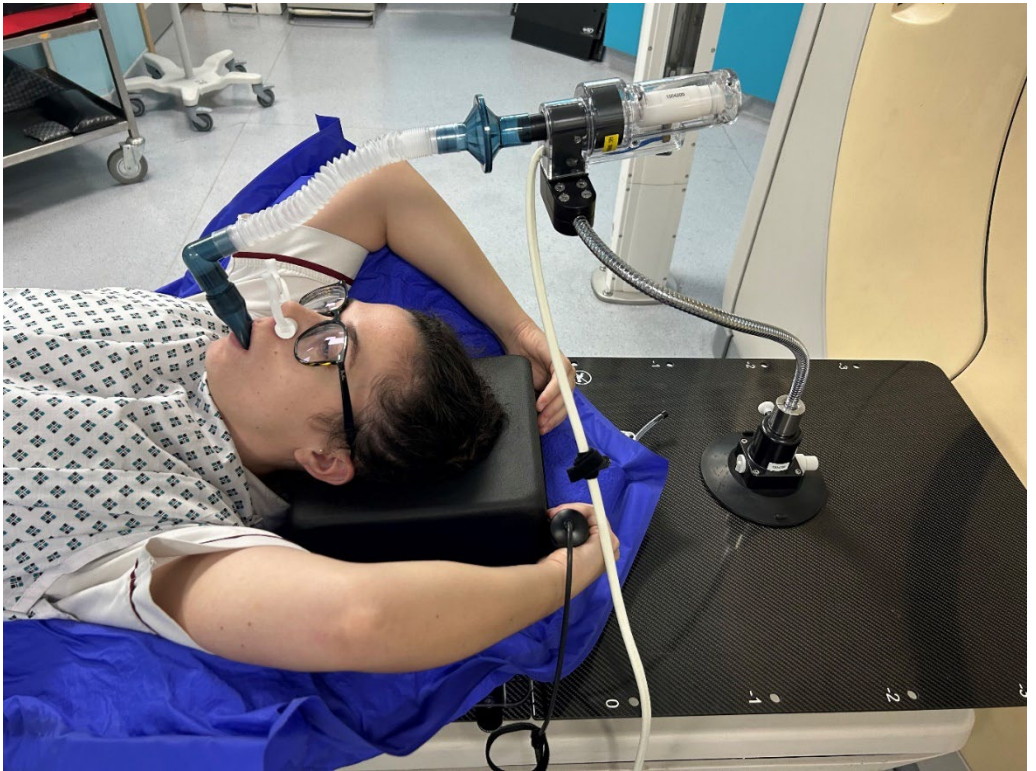
In order to make your coaching session as comfortable as possible, the Therapeutic Radiographers will start by setting the ABC system to help hold your breath for only 5 seconds.

Before you begin holding your breath, there are two things that need to happen.

- 1) You must push down on the hand held button (patient control switch) to allow the Therapeutic Radiographers to engage the ABC system.
- 2) The Therapeutic Radiographers must activate the software when they see you are ready to hold your breath.

Only when all conditions have been met will the ABC system help you hold your breath. The Therapeutic Radiographers will talk you through

this process and guide you to breathe in a steady pattern before asking you to hold.



Below is an example of the instructions the Therapeutic Radiographers will use to talk you through the process.

## The Breathing Routine (Verbal Instructions)

THERAPIST: We are going to practice holding your breath for 5 seconds, if you can press down on the button for me...

*Patient: You press down on hand held button*

THERAPIST: Now let's start with 3 steady deep breaths

*Patient: You breathe in and breathe out through your mouth*

THERAPIST: That's your first breath

*Patient: You breathe in and breathe out through your mouth*

THERAPIST: That's your second breath

*Patient: You breathe in and breathe out through your mouth*

THERAPIST: That's your third breath, on this next breath, breathe slowly and steadily until the machine helps you to hold

*You breathe in/out until the ABC system engages at your threshold and you hold your breath while the Radiation Therapists counts down*

THERAPIST: 5,4,3,2,1... and breath normally

*ABC system disengages and you resume normal breathing*

During your coaching session this process is repeated several times gradually increasing the time you hold in 5 second increments until you reach 20 seconds. It is recommended that during at least one of these breath holds you release the hand held button to ensure confidence that you are in control of holding your breath.

The Therapeutic Radiographers may also adjust the threshold that determines how much air you hold. This may be set higher or lower depending on what you feel is comfortable. Remember it is completely up to you what level your threshold is set at, so if you would like it changed, please ask the Therapeutic Radiographers.

In order to deliver your treatment it may be necessary to hold your breath up to 20 times so it is important that you are comfortable with this process and are confident with it.

After your coaching session is complete it may be necessary for you to return for a CT planning appointment. This is where the Therapeutic Radiographers will set your treatment position and take a CT scan (X-ray pictures) of your cancer site as outlined by your oncologist. This process usually takes around 1 hour but can vary depending on the area being planned. There will be further opportunity to practice holding your breath prior to the scan. You will hold your breath once for the CT planning scan. The information obtained from the CT planning scan is then used to develop a computer model that details how your radiotherapy is going to be administered.

Should you require further advice or information please contact:  
Radiotherapy Reception/Transport queries 01772 522900

Radiotherapy Appointment queries 01772 522931



## Sources of further information

[www.lancsteachinghospitals.nhs.uk](http://www.lancsteachinghospitals.nhs.uk)

[www.nhs.uk](http://www.nhs.uk)

[www.accessable.co.uk](http://www.accessable.co.uk)

All our patient information leaflets are available on our website for patients to access and download:

[www.lancsteachinghospitals.nhs.uk/patient-information-leaflets](http://www.lancsteachinghospitals.nhs.uk/patient-information-leaflets)

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Please ask if you would like help in understanding this information. This information can be made available in large print and in other languages.

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