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# Breath-Hold for a Hearing-Impaired patient

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# GenesisCare UK Centres



GenesisCare is a private cancer care provider across 14 sites in the UK.

All of our sites in the UK are tattooless using VisionRT.

I am situated in a market town in Cambridgeshire called Newmarket!

	Locations
●	Nottingham, Milton Keynes, Newmarket
●	Birmingham, Bristol, Oxford
●	Cromwell, Elstree, Chelmsford, Maidstone
●	Windsor, Southampton, Portsmouth, Guildford

# How do GenesisCare treat Breast Breath-hold patients?

- ⑦ The patient is setup using a breast board with both arms up.
- ⑦ Firstly, we complete a measurement from SSN to the centre of the field (measurement decided at CT), this is then checked against the ruler on the breast board to determine if the patient is within the right place. This helps eliminate pitch at initial set up.
- ⑦ We then use the VisionRT Cameras and 'video mode' to move the bed and patient into the treatment position using the **'free breathing'** surface.
- ⑦ Once we are satisfied the patient is in the correct position using VisionRT (all values are as close to zero as possible) we change the surface to **'breath-hold'**. The real time couch is used to verbally help the patient into breath-hold and make final adjustments to the bed/patient position.
- ⑦ The radiographers leave the room and use the intercom to inform the patient to take a breath-in for the CBCT. The image is assessed, and the bed adjusted accordingly. – when moving the bed into position the patient will need to be in breath-hold.
- ⑦ The treatment is delivered – the patient is coached in and out of breath-hold via intercom and the use of the RTC.

# Imaging at GenesisCare

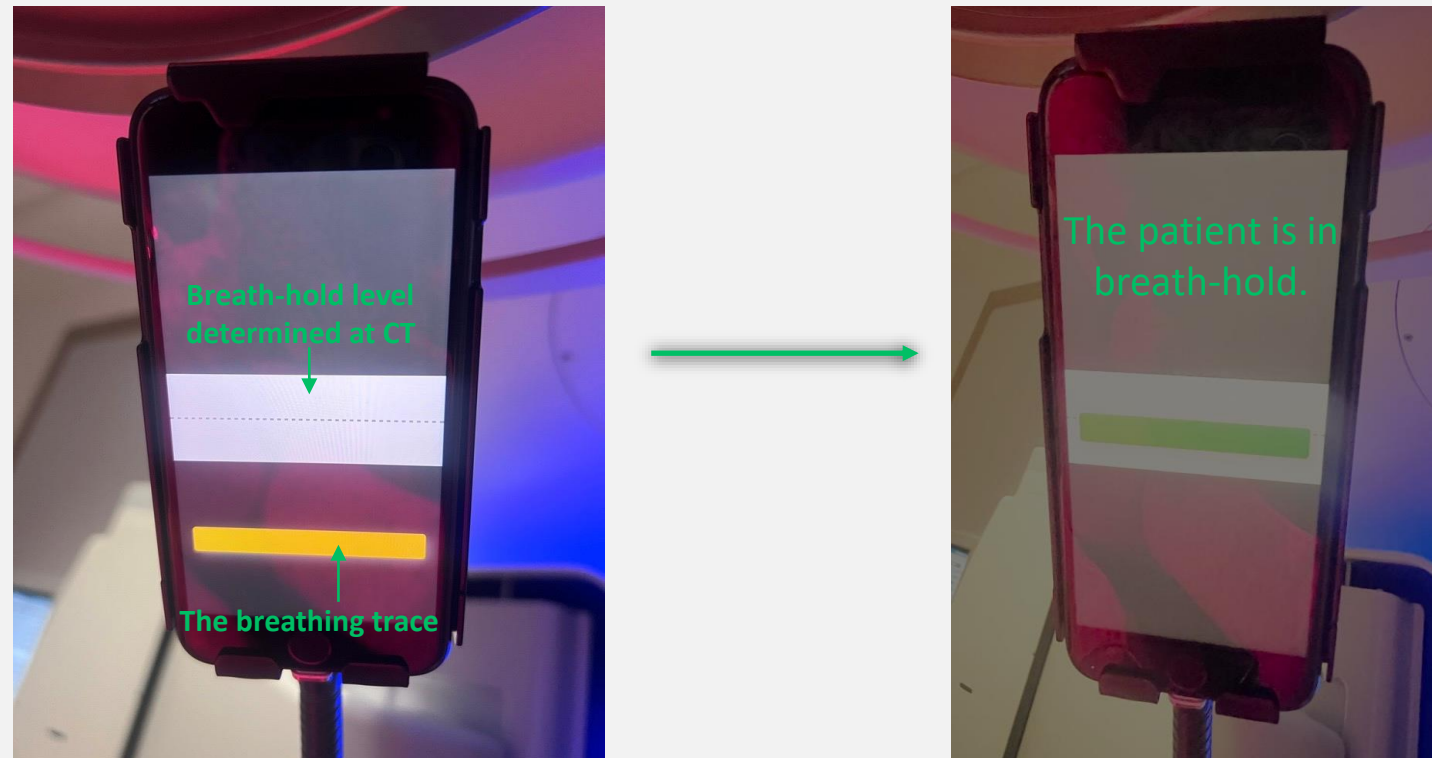
## All patients are setup using SGRT and a 3D image is completed daily

- ⑦ Every Radiographer at all 14 centres are trained to a high standard in 3D IGRT matching.
- ⑦ Breast patients are also 3D imaged daily, using a half arc to fully assess the position of the heart, lung volume, contour etc.
- ⑦ Daily CBCT for Breast patients alongside the use SGRT is crucial to assess position of the patient especially when treating IMC nodes, SIB, metastasis to the bone (sternum) and treatments with a VMAT plan.

# The Real Time Coach?

- ⑦ The real time coach allows the patient to see their breath-hold level to ensure they are breathing to the correct point for treatment.
- ⑦ An information sheet is given to the patient with what to do at CT so they are familiar with the procedure prior to treatment.

The patient will be presented with this screen when the breath-hold surface is selected on AlignRT.



# The Radiotherapy Referral: for a patient with a hearing impairment:

- ⑦ Left Chest wall and sternal met – 26Gy in 5#
- ⑦ Patient received previous right breast treatment in the NHS.
- ⑦ The planning team discussed using VMAT for the plan due to the sternal met and the previous treatment being very close – to achieve an optimal VMAT plan the patient would need to be in breath-hold.
- ⑦ Radiographer discussion on how we are going to facilitate breath-hold if the patient is unable to hear any queues to take a breath in and breath away during CT and treatment.

# The MDT discussion:

## Team brain-storm:

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- ⑦ We discussed as a radiotherapy team how best to facilitate visual prompts to communicate to the patient during treatment: 'breath in' and 'breath out.'
- Using the SGRT monitoring light to indicate Breath in. switching it off when we want the patient to breath-out. (concerns around patient moving when the light is off and not being able to monitor during these times.)
- Using a light box or LED light to indicate breath in and out. (Green light for breath-in and red for breath-out.) This enables us to leave monitoring on.
- Coaching on waiting a length of time before the patient takes a breath-in and out.
- We need to ensure good coaching on the RTC so the patient understands what to do in the room. User guide on the RTC was created.

## Discussion with VisionRT:

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There a few suggestions and experiences below but the room lights seems to be the easiest option and effective:

1. Turning room lights on and off as and indicator to inhale and exhale
2. Oslo university has a light sign (similar to a restaurant open sign 😊) which they turn on and off
3. For a less creative but similar approach is to install a coloured wall mount light which is switched on and off from the console area- again a visual signal
4. Patient uses the RTC and breathes in and out without audio coaching. At a clinic in Poland they provide the patient with a written instruction of the procedure. Challenge is communicating to the patient when they need to breath in for the ref captures but I guess someone could go into the room for that
5. Another less conventional approach is to use the flash of the cameras when taking a ref capture to indicate breathing in

We have had customers in France, Norway and Poland who have treated hearing impaired patients- so let me know if you require anything else.

# What do we want to achieve?

The Planning teams want to achieve a **robust treatment plan** with no limitations. VMAT being the preferred option in breath-hold to limit motion of the target volume, also ensuring no overlap with the previous treatment.

Radiographers need to establish a way of achieving this outcome **without verbal queues during CT and treatment** so the patient can receive the same high quality, effective treatment that any other patient would receive.

The teams want to ensure high engagement with the consultant, maintain trust and ensuring we can deliver complex treatment that is inclusive to everyone.

Ultimately, **we want the patient to feel empowered** and to feel in control of their treatment. The patient should feel reassured that they will receive treatment that has no limitations, it is high quality, and designed for them.

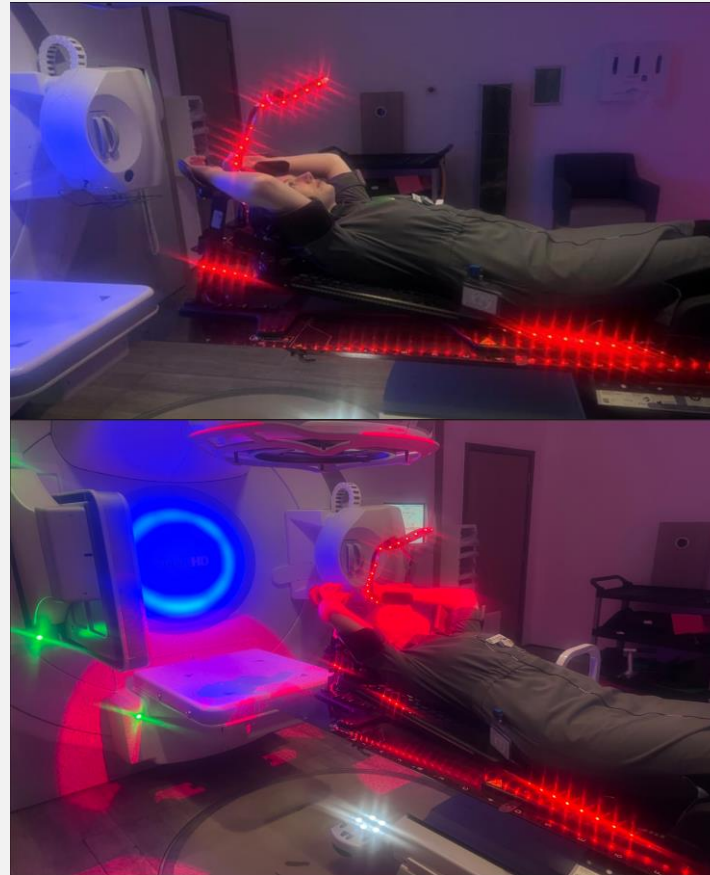


# What we did!

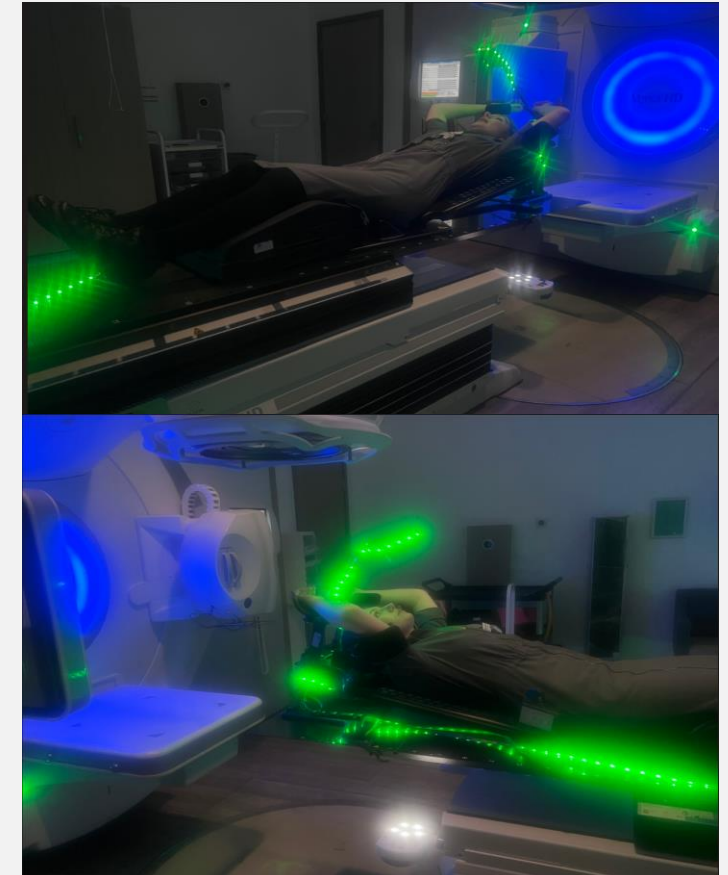
## LED Bluetooth controlled light

- ⑦ **We purchased a 30m LED light from Amazon.**
- ⑦ Using the sticky back on the LED light we attached it around the RTC and trailed the rest of the light to the plug. (this had to be outside the room or the Bluetooth doesn't reach.)
- ⑦ The light was red for breathing normally and green for breath in. (this was explained to the patient.)

## Breathing normally



## Breath in



# Our Findings:

## The light:

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- ⑦ Room design was an issue, as we didn't have a plug in the maze, so this needed to be trailed outside of the room.
- ⑦ The Bluetooth only has limited reach, so the detector needed to be close to the phone operating it.
- ⑦ The sticky back on the light was helpful attaching to the RTC.
- ⑦ We needed to ensure the light trailed on the side not being treated due VMAT.

## Patient feedback:

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- ⑦ The patient was very impressed with the light, she found it easy to understand.
- ⑦ She expressed what great innovation it was and how she was grateful for us making the effort.

## Radiographer feedback:

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- ⑦ The light was easy to use and easy to explain to the patient.
- ⑦ We were concerned that we may have to use the VisionRT light to indicate when to breath in and we wouldn't be able to monitor throughout treatment.
- ⑦ The LED light enabled us to continually monitor the patient and ensure she was getting the same standard of treatment.

# To sum it up...

The planning and radiotherapy team were able to produce a high-quality complex treatment with no limitations for a patient with a hearing impairment.

- ✓ VMAT plan which included the sternal met.
- ✓ Continuous monitoring using VisionRT throughout treatment.
- ✓ The use of the real time couch for accurate breath-hold.
- ✓ The light indicating when to breath in and out with no verbal prompts.

The light would also be useful for patients where there is a language barrier or if the intercom function was not working.

Thank you!

Any Questions?