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## **A thematic exploration of patient and radiation therapist solutions to improve comfort during radiotherapy: a qualitative study**

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## **ABSTRACT**

### **Purpose**

Patients undergoing radiotherapy are positioned to restrict motion, ensuring treatment accuracy. Immobilisation can be uncomfortable which may impact treatment accuracy. Therapeutic radiographers (TR) are responsible for managing patient comfort, yet there is little evidence to guide practice. The objective was to explore patient and RT experience of comfort management during radiotherapy and identify solutions for how comfort may be managed.

### **Materials and Methods**

25 adult patients were purposefully recruited from Somerset NHS FT (SFT NHS) from those referred for, receiving or who had received radiotherapy within 3 months. Further criteria were that treatment delivery time on the couch exceeded 10 minutes (the time the patient was immobilised on the radiotherapy couch). 25 practicing TRs were recruited across the United Kingdom (UK) with experience of treatment delivery times exceeding 10 minutes. Semi structured interviews were conducted by the researcher at SFT NHS or in patients own homes and via telephone for TRs. Interviews were audio-recorded and transcribed verbatim. Thematic analysis was performed by SG and after familiarisation with data, generation of codes, the themes defined were reviewed by researchers and patient partners.

### **Findings**

For patients, the three themes were: Supported Coping, Modification to position or immobilisation and Information communication & preparation. For TRs three main themes emerged: Supported Coping, Supporting & Adjusting Patients to Maintain Position and Preparational Approaches.

### **Conclusion**

This qualitative paper provided a shared voice of how comfort can be best managed from the perspective of patients and TRs. Patient and TR views of how comfort is best managed has provided solutions that may be used during radiotherapy. The study has highlighted some of the positive and negative experiences of comfort solutions based on current UK practice. This information will be used to develop recommendations in a radiotherapy comfort intervention package.

## INTRODUCTION

Patients must be immobilised in a stable and reproducible position for accurate radiotherapy (1). However, positioning and immobilisation may not be physically comfortable and patients may experience anxiety and distress (2). Evidence suggests that patient discomfort is associated with reduced accuracy of radiotherapy treatment (3,4). The principle is that greater comfort may lead to greater stability as patients are able to remain positioned for radiotherapy. Greater stability during radiotherapy is synonymous with improved accuracy (3,4). Recent advancements in radiotherapy, such as extreme hypofractionation and 4D approaches, require a greater obligation for patients concerning positioning and immobilisation. These advanced treatments warrant a re-visit of patient comfort interventions during radiotherapy (5).

Studies have investigated comfort interventions during radiotherapy within the last decade (6,7). Nixon et al (6) surveyed 35 head and neck cancer patients about strategies that reduced mask anxiety during treatment. Non-pharmacological interventions were found most helpful by patients, including discussions with Therapeutic radiographers (TRs), meditation, and music (6). Another study conducted workshops with nine women to explore their experiences of radiotherapy for breast cancer (7). Probst et al confirmed the importance of meeting information needs and highlighted the need for patient empowerment during the treatment process (7). These studies have explored the possibilities of developing comfort interventions. Our previous research included a systematic literature review identifying 46 randomised controlled trials (RCT) testing comfort interventions used for healthcare procedures (5). These RCTs tested various comfort interventions including music, movies, aromatherapy, education or information about the procedure, cognitive behavioural therapy, and massage (5). While there is growing interest in developing and testing comfort interventions in radiotherapy, further exploration of potential candidate interventions is required. This may include physical to psychological interventions such as cushions to areas of pain (arthritis) and audio-visual distraction.

Patient and TR experiences of comfort during radiotherapy were previously reported in a large interview study (8). An understanding of potential comfort solutions is required to fill the gap in the literature and enable the development of a comfort

intervention package for patients receiving radiotherapy. This paper focuses on improvements in patient comfort during radiotherapy, as voiced by patients and TRs.

## **METHODS**

The methods of the interview study have been reported previously and are summarised below (8). The methodological paradigm is idealist forming an arc between the technical, positivist, demands of radiotherapy precision with the comfort experienced by patients and supported by RTs (9).

### **Design**

The interview study used semi-structured interviews with patients and TRs (10). Ethical approval was granted by Berkshire B NHS Research Ethics Committee (18/SC/0689) in January 2019 and the protocol was prospectively registered [[www.clinicaltrials.gov](http://www.clinicaltrials.gov) NCT03984435]. Patients and TRs provided written informed consent and interviews were conducted between January 2019 and July 2019. This study is reported in accordance with to the Consolidated criteria for Reporting Qualitative research (COREQ) checklist (11). Pragmatically we chose a sample of 50; 25 patients and 25 TRs (12)

### **Patient participants**

Eligible participants were recruited from those attending a radiotherapy department in the Southwest of England. Patient participants (n=25) were adults over the age of 18 years, diagnosed with malignancy in one of the three main anatomical sites: head and neck, thoracic/breast, and pelvis; and received radiotherapy within the last three months (to remember their experience clearly) with a treatment time exceeding 10 minutes (to encompass patients who needed to hold position for a longer time) (13). Participants had to read and understand English to participate in the study.

### **Therapeutic radiographer participants**

Participants were recruited via social media and specialist interest groups of professional societies linked to radiotherapy. The TR participants (n=25) were working clinically (Health and Care Professions Council register check) and delivering radiotherapy with times exceeding 10 minutes.

### **Procedure**

Interview guides for patients and TRs were developed using existing literature (Electronic supplementary material 1). The lead researcher (SG) performed all the interviews and was unknown to patient participants but known to some of the TR

participants as a therapeutic radiographer. The lead researcher holds a Master of Science in therapeutic radiography and is undertaking his doctor of philosophy supported by an experienced supervisory team who also acted as co-researchers. Patients were interviewed mid-way during radiotherapy at a place of their choosing (14). The TRs were interviewed via telephone at a date and time of their choosing. Interviews were audio recorded and transcribed verbatim by the lead researcher. Interviews were conducted for a duration up to one hour.

### **Data analysis**

The six steps of thematic analysis as described by Braun and Clarke (15) were applied, facilitated by NVivo software (v1.6.1). The thematic analysis performed in this paper specifically focused on the suggestions for improving patient comfort during radiotherapy from the perspective of patients and TRs.

In summary, the first step of thematic analysis started with familiarising of the data. The next step included the generation of codes, followed by the defining sub-themes and themes. After this the themes were reviewed and redefined by the research team and two patient research partners. The final step was the report described in this paper.

## **FINDINGS**

### **Participant characteristics**

Of the 25 patient participants, 13 were male. The anatomical site of cancer was almost evenly distributed (Head and neck n=8, Thorax n=9, Pelvis n=8) with treatment times ranging from 10 to 15 minutes. The majority of the 25 TR participants were female (n=20) and were predominantly in senior practitioner roles (qualified for 2 years or more) (n=14).

### **Comfort solutions proposed by patients**

Three themes emerged from thematic analysis of patient interviews (Figure 1): Supported Coping (5 subthemes), Modification to Position or Immobilisation (3 subthemes) and Information Communication & Preparation (2 subthemes). Findings were similar across all anatomical cancer sites for the reported themes.

#### *Supported Coping*

The theme Supported Coping included strategies to help patients get through radiotherapy with greater comfort. Patients discussed being supported by TRs to cope with radiotherapy using audio-visual distraction, empathetic support (hand



holding & gentle words) and self-initiated distraction /coping. Patients appreciated the transcending effect of music;

*“Once they had the greatest showman and I was singing along in my head, and I was gone [P03], and having their choice of music: Often there’s music on and often it’s the music I’ll ask for which is great as well” [P04].*

Patients also appreciated empathetic support such as gentle words or handholding:

*“They came to talk to me and held my hand. The mask felt very tight to start off with and obviously you are not used to such things” [P17].*

Patients reported using various methods to cope with radiotherapy. Some patients reported using positive self-talk:

*“Well, that was the first time I panicked was day one but after that I was fine. So you get used to it and yes I thought to myself you can do this, man up” [P14].*

Others used distraction via counting or focusing on something:

*“I listened to the machine; I listened to the noises that were going on so I knew what’s happening” [P18].*

While others used their spiritual faith for example one patient said:

*“Because of my Christian faith, there were some times when I was praying and most of the time, I shut myself off” [P12].*

Participants also reported benefiting from the radiotherapy service hospitality (greetings, check in and refreshments).

### *Modification to Position or Immobilisation*

This theme reflected the daily positioning and immobilisation (P&I) of patients for accurate radiotherapy treatment. The suggested comfort solutions included

adjustments to P&I, prioritising comfort, soft comfort aids and accommodating pre-existing health concerns. Many patients reported adjustments to their position or immobilisation before or during treatment to alleviate discomfort, such as:

*“They would ask. Are you comfortable or whatever, and then move me down a bit [or ask me to] move up a bit” [P11].*

Some patients found that TRs would ensure their comfort was prioritised:

*“...And they made sure that if I was uncomfortable, they would reposition me” [P22],* and other patients highlighted how TRs supported them taking into consideration their existing health care conditions:

*“As for comfort I was so pleased I had the flexi gel for my back. That stopped any pain that I was going to get” [P12].*

### *Information Communication & Preparation*

This theme emerged from the information provided before radiotherapy, the compassionate communication and preparational approaches. Patients expressed the importance of good communication and tailored information provision. They wanted appropriate preparation before attending for radiotherapy:

*“I think it would have been a small improvement to have a session before coming for the actual thing” [P07].*

And to be kept informed during treatment delivery:

*“Yes they kept you informed of what was happening and exactly what you needed to do, to stay still” [P05].*

Although patients were content with verbal communication, many would have liked modifications to the amount and format of information received:



*“That's why I said I would like to say I didn't want to be informed of everything because I have a filter system on this and only want to know about stuff on a really need to know basis” [P17],*

And some patients emphasised that greater preparation may have helped:

*“Even video would be ok. So you know what you are going into” [P02].*

### **Comfort solutions proposed by Therapeutic radiographers**

The TR interviews revealed three themes (Figure 2): Supported Coping (7 subthemes), Supporting & Adjusting Patients to Maintain Position (8 subthemes) and Preparational Approaches (3 subthemes). Findings were similar across all anatomical cancer sites for the reported themes.

#### *Supported Coping*

The theme Supported Coping included strategies that TRs used to help patients get through radiotherapy more comfortably. TRs reported supporting patients using a multitude of methods including physical, audio-visual distraction and psychological support and tailoring care to the individual. Physical methods included hand holding or providing a comforting blanket:

*“Sometimes the patients from time to time want to us to hold their hand” [R05].*

TRs mentioned the use of music or lighting:

*“I think some people might like the lights down. It's like when you when you just assume the person would prefer the lights on and walk out and assume that” [R08].*

Psychological support included information provision during treatment:

*“So they're on the bed for like 40 minutes but we spend a lot of time talking to them coaching them through microphones” [R06].*

Pharmacological interventions were also highlighted:

*“I suppose head neck patients or anybody in a shell which is you know a whole different league in terms of comfort. Patients often talk about them digging into their neck and stuff, not everybody's neck is the same size and shape. People have daily Lorazepam to get through treatment in a shell (thermoplastic mask)” [R02].*

Some TRs also referred patients to external services to support coping:

*“Absolutely, you always offer complementary therapies to sort of try and go alongside. They always offer things like that. I really wish there was some way we could have a psychiatrist on hand because I think that it's a major problem” [R03].*

Other forms of psychological distraction were noted by many TRs:

*“The patients sometimes use stress balls” [R11],*

*“Others take themselves to somewhere in their minds, but that's on an individual patient basis” [R07].*

Many patients have some form of spiritual faith with an TR suggesting:

*“I mean it was just one example, there could be someone from a religious background and we would say to a Roman Catholic you can bring your rosary beads, or you know often ask to our Muslim patients would they want the Koran played” [R09].*

### *Supporting and Adjusting Patient Position or Immobilisation*

This theme emerged from TRs reporting adjustments to positioning, immobilisation or making mask modifications before and during radiotherapy. TRs highlighted the challenge and judgement required to make changes once radiotherapy treatment had commenced:

*“Obviously if on treatment the patient tells you it is not comfortable maybe it would not be changed just because you wouldn't want to change your rotations too much. Obviously, you have a bit of leeway with some patients where the treatment area is further away” [R09].*

Some TRs gave examples of mask modifications:

*“If we have had patients in the past where we've been able to cut parts out of the mask in order so they can see a bit better maybe given that a little bit of comfort means a little bit less anxious about the mask and claustrophobic and things like that. We have had patients in the past that have post-traumatic stress disorder from things that happened previously in their lives” [R15].*

TRs described using a variety of approaches to support patients to maintain position:

*“Well the first thing that we do is question is the patient was actually capable of holding position” [R10].*

Another TR highlighted that preparation may benefit patients too:

*“Advise them that if they want to stretch out their arms and just have a little stretch or wriggle that's okay” [R01].*

Then TR voiced their concern for patients with existing health conditions:

*“We have also had patients before in the past who haven't been able to lie flat due to things like scoliosis problems with the spine and things like that and they actually ended up creating a device that the patient could have a leg up in the air completely so that he could like foster the treatment and he was able to manage that position really well and ended up managing” [R15].*

TRs expressed how they aimed to prioritise comfort:

*“So that's always been our aim from the very beginning to make the patient as comfortable as possible so we don't always use what would seem to be the most restrictive immobilisation because it's not always all that comfortable” [R01].*

Other TRs suggested holding something with a calming effect:

*“Yes we suggest they may like to hold things of sentimental value like a toy from grandchild, or a piece of jewellery or something like it” [R13].*

### *Preparational Approaches*

This theme arose from TRs' perspectives that information and communication must be tailored to the needs of the patient and that they should be prepared. TRs reported that patients appreciated tailored information:

*“I try to make sure our patients think that they get what they need and that they know enough information prior to and during radiotherapy treatment” [R19].*

TRs also found that patients benefited from personable communication:

*“In my previous trust there were advanced practitioners who probably meet the patients at the consent stage and get to know them at the personal level so that they would have better insight. Communicate with a treatment team and any of the special needs of the patient were noted” [R18].*

TRs used different approaches to prepare patients for radiotherapy:

*“Oh yes the open evening or coaching/ education. So basically, some sort of session before they come in just to give them an overview (of radiotherapy)” [R11].*

Other TRs suggested providing information about the procedures might be beneficial to patients:

*“He did an animation of a couple of setups with the head and neck setup that actually showed them like an X-ray or the spine and showed them the position that*

*we were putting them into and why we would do that. And that works to care for the head and neck but the one that really worked quite well for was prostate patients"* [R14].

### **Shared proposals for comfort solutions between patients and TRs**

Two of the three themes of the patients and of the TRs demonstrated a shared vision of comfort solutions that could be used in radiotherapy (Electronic Supplement Material 2).

The theme Supported Coping emerged from patients and TRs and it included five sub-themes from the patients interviews and seven sub-themes from the TRs interviews. The common subthemes were Supported Distraction Techniques, Audio-visual Distraction, Hospitality/Hospitality and Aesthetics, Empathetic Support/Approaches and Self-initiated/Perceived Coping. Two sub-themes emerged only from the TR interviews and were named Pharmacological and Referral to External Services.

The patient theme Modification to Position or Immobilisation and the TR theme Supporting and Adjusting Patient Position or Immobilisation included the following shared sub-themes: Accommodating Pre-existing Health Conditions, Prioritising Patient Comfort with Soft Pads or Mattress, and Adjusting Position or Immobilisation/Adjusting position before or during treatment.

## **DISCUSSION**

The objective of this paper was to explore patient and TR views of how comfort could be better managed to support patients undergoing radiotherapy. Similar comfort solutions were identified by patients and TRs which suggests that comfort solutions may be used interchangeably to meet individual patient needs. The similarities of suggested comfort solutions indicate that interventions might be suitably developed for patients having radiotherapy for a range of anatomical cancer sites. Moreover, our previous work exploring patient comfort has shown that patients may experience a combination of physical and psychological discomfort (8), which means a range of comfort solutions could be used concurrently to ameliorate discomfort. Based on the current explored themes, this may include a supportive coping strategy used in

conjunction with support for a patient to maintain position, ensuring they can successfully complete their course of radiotherapy. For example, a modesty gown to cover exposed breasts may help a patient to cope with potential embarrassment (7) while a soft elbow restraint could help maintain arm position (16). This highlights the importance of holistically addressing patient comfort.

One of the shared themes, Supportive Coping, revealed several subthemes that can be translated into comfort interventions to support an array of discomfort experienced by patients during radiotherapy. These comfort interventions might align to the four contexts of comfort described by Kolcaba (17), which are physical, psycho-spiritual, social-cultural, and environmental. For example, a patient donning a thermoplastic mask may suffer the physical discomfort of restraint due to the tight fitting mask and may also feel highly anxious, a psycho-spiritual discomfort. In this situation, an empathetic approach from TRs together with a form of distraction such as music or gentle words over the intercom may help ease the discomfort. Therefore, multi component interventions might need to be developed and tested for effectiveness to improve patient comfort through radiotherapy.

The second shared theme to arise from patient interviews was Modification to Position or Immobilisation and from TR interviews was Supporting & Adjusting Patients to Maintain Position. These themes reflect common radiotherapy practice, the daily pursuit to position and immobilise patients for accurate radiotherapy (1). This theme includes accommodating pre-existing health conditions, prioritising comfort with soft pads or mattresses and adjusting position or immobilisation including modifications to thermoplastic masks. A qualitative study of patients with pelvic cancers reported that they experienced discomfort with the hardness of the couch and bladder/rectal preparations (16). Patients described feeling 'rigor mortis' from holding still during prostate irradiation and requested a lateral extension for their elbow which helped (16). Some participants in our study suggested that the hardness of the couch could be modified with soft pads under elbows or areas away from the target area that would not impact on the stability and accuracy of radiotherapy. Together with the lived experiences of comfort (8), and the need to consider holistic comfort interventions, the physical aspect of comfort such as modifications to immobilisation must not be overlooked.



The final theme arising from patient interviews was Information Communication & Preparation. Many patients voiced the importance of communication and how information was delivered. In our study different formats such as video or online applications were suggested and could also be used to prepare patients for radiotherapy. A similar final theme arising from TR interviews was Preparational Approaches. Many TRs said that preparation was key including tailored information, proactive communication, preparation methods and tours of the radiotherapy department. Again, TRs suggested that video or online applications could support these comfort solutions.

These findings are supported by other studies in the UK and Europe which found patients were dissatisfied with the information received after cancer diagnosis (18). Thomas and colleagues identified that patients preferred video information before and during treatment reducing the anxiety significantly compared to standard of care (18). For some patients, a greater understanding of the radiotherapy process improves the overall feeling of comfort. Therefore, information provision should be considered along with other solutions.

The presented comfort solutions in our study may be used to improve patient comfort during radiotherapy. Exploring solutions to provide comfort in radiotherapy has provided greater knowledge of how services may be able to tailor individual treatment and care to patients. The clinical implications of our findings suggest that TRs should consider using a variety of comfort solutions for their patients (35). Several suggested comfort solutions in our study might be easy to adapt and implement in radiotherapy practice. However, the feasibility of implementing these solutions has not been explored in-depth in clinical practice. Therefore, TR clinicians and academics should focus on whether comfort solutions are feasible in practice and how they can be delivered as a package of care.

### Methodological considerations

It must be acknowledged that interviewing a greater a number of participants may increase the number of proposed comfort solution arising from subthemes. Although the final interviews did not reveal any new comfort solutions. However, the principle

of generating new knowledge is a continuum, where this paper provides the foundation for generating more knowledge and improvements to comfort for future patients.

## CONCLUSION

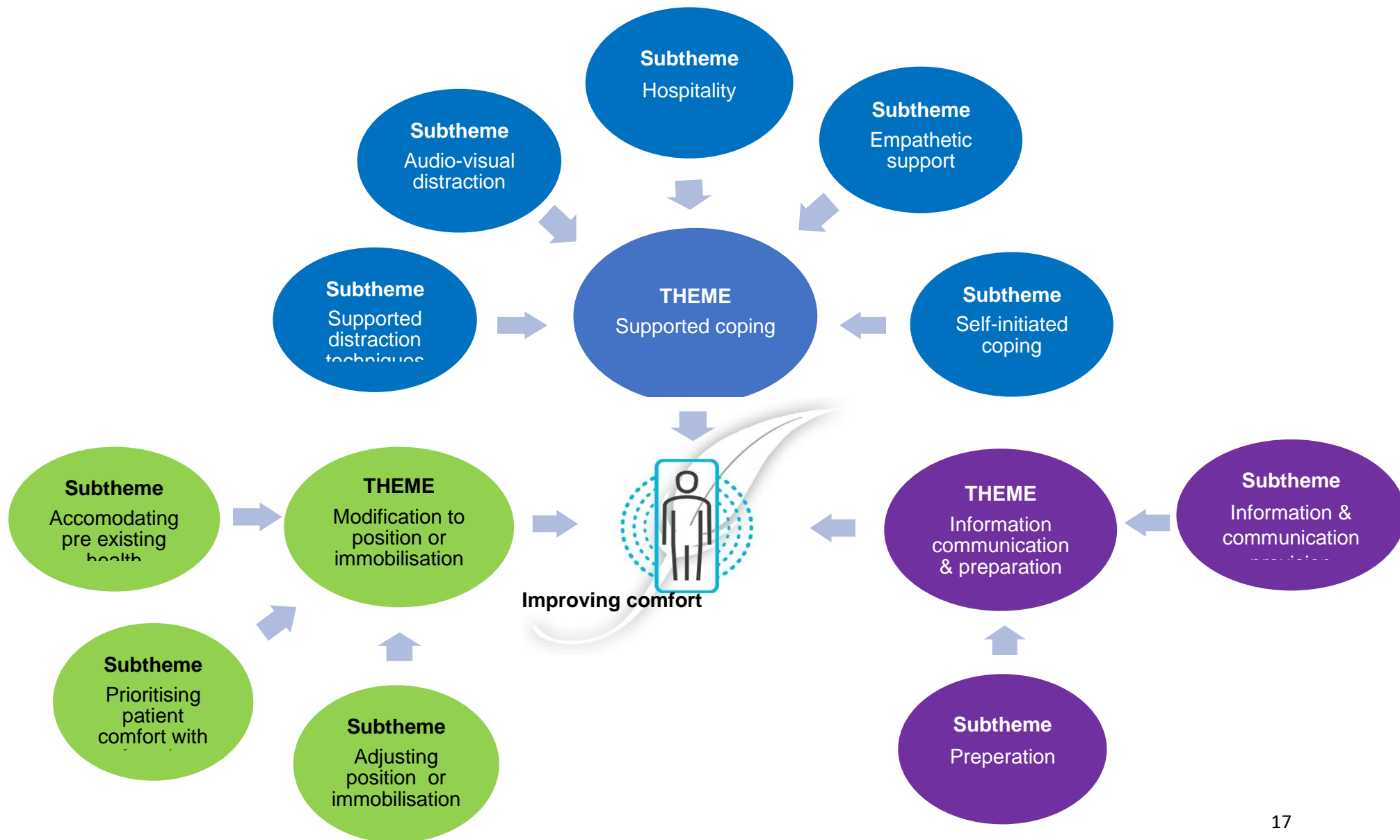
Patients and TRs have proposed solutions to improve comfort management during radiotherapy. Three themes emerged including Supported Coping, Modification to position or immobilisation and Information Communication & Preparation Although the findings were similar across anatomical cancer sites site-specific needs were identified, supporting individually tailored approaches. These results provide a basis for determining comfort interventions appropriate for use in practice. We recommend future work includes investigations of the effectiveness of individually tailored packages of comfort solutions.

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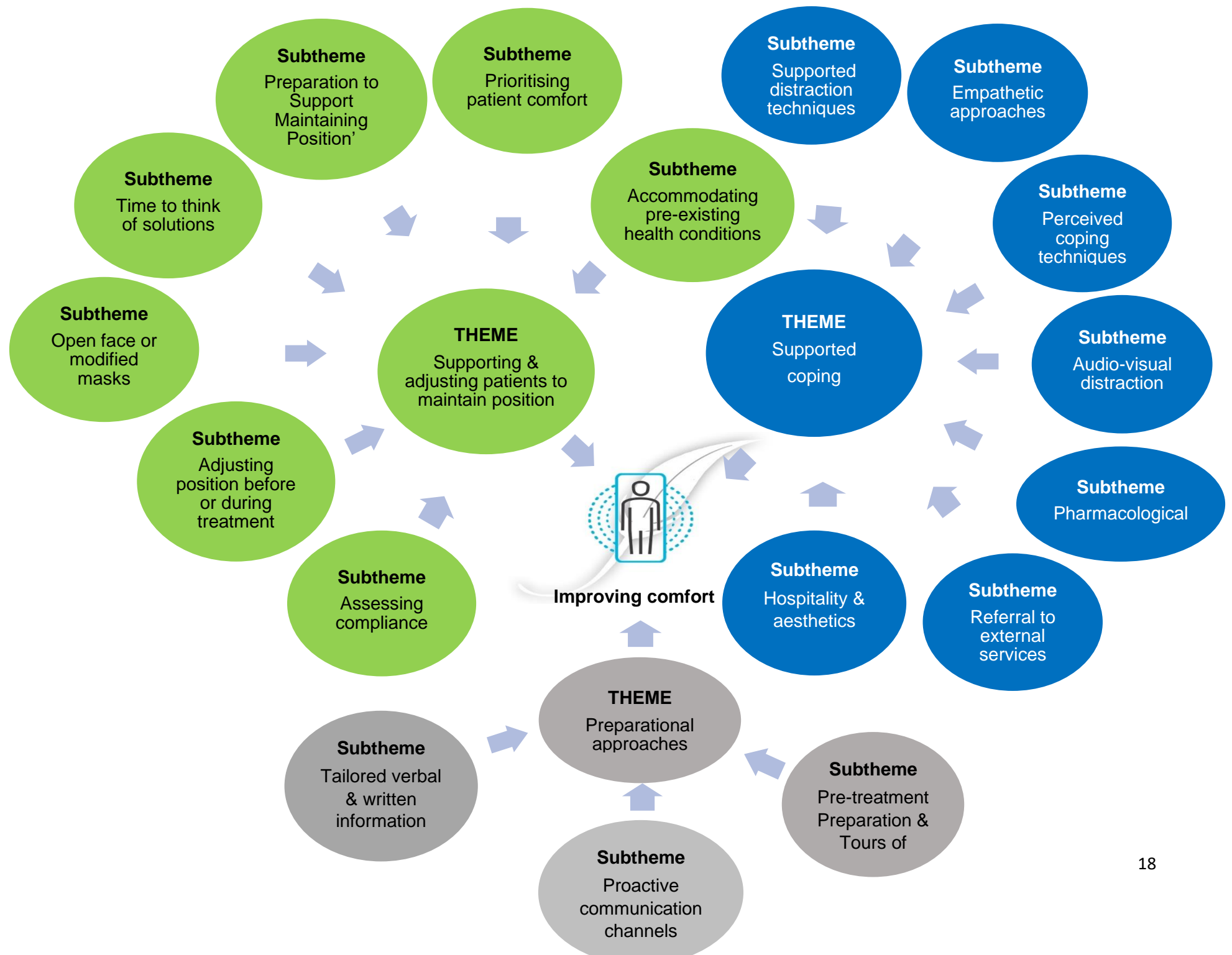
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**Figure 1.** Patient comfort solutions



**Figure 2. TR comfort solutions themes**



## **Electronic Supplement Material 1**

### **PATIENT INTERVIEW GUIDE**

- **Have you or your therapeutic radiographer tried anything to help with getting into position and keeping in position during treatment?**

PROMPT:

If yes, what have you tried to improve your comfort?

If no, have you any thoughts about what could be done to improve your comfort during your radiotherapy treatment?

- **Have you any thoughts about what we could do to improve your comfort during radiotherapy?**

PROMPT:

If anything were possible, what would you do?

- **Is there anything else you would like to add?**

### **THERAPEUTIC RADIOGRAPHER INTERVIEW GUIDE**

- **What do you do to improve patient comfort during extended treatment times?**

PROMPT:

If you intervene to improve comfort, what have you tried?

If you have not, have you any thoughts about what could be done to improve your comfort during your radiotherapy treatment?

If uncertain, is there anything you would want to change or improve about your practice?

- **Is there anything else you would like to tell me about your experience?**



Electronic Supplement Material 2 Emergent themes and subthemes of comfort solutions

Themes	Subthemes	Example of patient quotes	Example of TR quotes	Shared solutions
Information & Communication Preparation (Patient)		<p><i>P02: Even video would be ok. So you know what your going into.</i></p> <p><i>P05: Yes they kept you informed of what was happening and exactly what you needed to do, to stay still.</i></p>		Patient only comfort solution
	Information & Communication Provision (Patient)	<p><i>P12: When I first found out that I had to go for radiotherapy I had already read the book, so I had put myself in the picture. My first experience on the machine.</i></p> <p><i>P17: That's why I said I would like to say I didn't want to be informed of everything because I have a filter system on this and only want to know about stuff on a really need to know basis.</i></p>		Patient only sub theme

Themes	Subthemes	Example of patient quotes	Example of TR quotes	Shared solutions
	Preparation (Patient)	<p><i>P03: Difficult to say I mean it maybe helpful to, I mean actually did have the chance to look around the department which we didn't take up because we were so far away. We are an hour away. But I think for most people it would be important to look around. To see the machines, see the masks, and to know exactly what's going to happen. Because a booklet is not quite the same. Because when I had a mask made and I actually saw ones, I went oh my goodness. That's quite a mask. I didn't think it would be as big as that, I didn't think it would be as rigid as that. I kind of had this vision of a mesh thing. Because it looks mesh again in the booklet. I didn't expect it to be quite so hard.</i></p> <p><i>P04: So I got lots and lots of information and leaflets in. Some were given to me and some I've picked up from Macmillan here. I probably did at some point when I was having the CT scan saw a picture of the machine and saw how it worked. So it might be even an online area where you go to it, and it says do you want to see a video of it. This is head and neck, tummy, legs or what ever it is bang bang bang, a 30 second video this is what to expect in the room. I didn't find it a problem but it might quite a nice way of saying. I quite right in saying when your treating you can take people in and show them around. There might be a way of putting those journeys on to a video somehow. Then maybe put it online.</i></p> <p><i>P07: I think it would have been a improvement to have a session before coming for the actual thing. Yes. I would say yes to that. But for other people perhaps who are less familiar with medical terms and the like may have been quite frightened. I think it would have been a big help for them.</i></p>		Patient only sub theme

Themes	Subthemes	Example of patient quotes	Example of TR quotes	Shared solutions
Preperational Approaches (TR)	Proactive communication chanel	No quotes for this subtheme	<p><i>R02: Sometimes it's about cancer but oncologists don't tend to get too involved in patients either. Medication, yeah you know, passing things on no matter what it is, really slows that down the line but you can do something about it so you can be proactive rather than being reactive.</i></p> <p><i>R05: I think the biggest the lack of communication between different hospitals when a patient's in one hospital then coming over to ours. That's where I've noticed that has a really big impact especially if you're doing an on-call service and a patient comes and the nurse comes with them and they've said they had pain relief so many hours ago and actually it's worn off now. I know there's nothing we can do until there's a doctor or nurse available to prescribe and get the medication that's appropriate.</i></p> <p><i>R18: In my previous trust there were advanced practitioners who probably meet the patients at the consent stage and get to know them at the personal level so that they would have better insight. Communicate with a treatment team and any of the special needs of the patient were noted. That doesn't necessarily happen where I work now.</i></p>	TR only sub theme

Themes	Subthemes	Example of patient quotes	Example of TR quotes	Shared solutions
			<p>R24: Like I said, we touched on it earlier, first day chats they are very important, patients have first days chats before radiotherapy but before that they would meet CNS's, they would meet new TRs, they would meet CT team which again they do first...a chat there to explain everything, I think once patients are more aware of what happens, they are more accepting.</p>	
	Tailored Verbal & Written Information and Pre-Treatment Communication (TR)	No quotes for this subtheme	<p>R06: Yes we did a lot of SRS and that helps. We give them information and tell them outside the room that they were still attached to them.</p> <p>R07: We give them written information and ensure they are treated with dignity.</p> <p>R19: I try to make sure our patients think that they get what they need and that they know enough information prior to and during radiotherapy treatment."</p> <p>R23: I think it's important that we give them more information. To make them feel better mentally as well as physically because we're not just now. We got to treat the whole patient not just their physical issues. Yeah.</p>	TR only sub theme
	Pre-Treatment Preparation & Tours of Radiotherapy (TR)	No quotes for this subtheme	<p>R11: The training videos and things, the DVD for patients even the training DVD you have patients on that. And sometimes we have dementia as well. We've got specific books that go through step by step what's happening in the machines. And sometimes you know with dementia and learning difficulties patients. It is really beneficial to sort of go through a picture store, that is really good.</p>	TR only sub theme

Themes	Subthemes	Example of patient quotes	Example of TR quotes	Shared solutions
			<p><i>R14: "He did an animation of a couple of setups with the head and neck setup that actually showed them like an X-ray or the spine and showed them the position that we were putting them into and why we would do that. And that works to care for the head and neck but the one that really worked quite well for was prostate patients. So we did it for the prostate and the bladder patients regarding bladder and rectal filling. Why we did it for effects of rectal gas and how it might move the prostate around as well.</i></p> <p><i>R17: So it's just a case of just having more coaching with patients as a kind of help so we don't have to get them off the bed as much as what we were finding that they were coming off the bed quite a bit because it's uncomfortable.</i></p> <p><i>R23: I think coaching patients before their treatments is really important. Because so often they can't even sign and communicate with you generally when they're in the treatment position.</i></p> <p><i>R03: I just think not having that hard couch is sort of quite nice and you always want things to be more sort of patient centred like I really wish there was some way we could sort of set sessions beforehand. This is how you know how the machine works. And this is what it looks like and this is what happens when you have your scan just to sort of reduce those anxieties before we have a chat with them on the first day and before they go into the room because most times they have their treatment and then we get back and we're all done like.</i></p>	

Themes	Subthemes	Example of patient quotes	Example of TR quotes	Shared solutions
			<p><i>R06: The coaching is an initial thing that takes place with the doctors to see what is needed. They've got the clinic. At a clinic before they have to take these guys to the centre half an hour before their scan. So it's a TR that tells them what's going to happen, explains everything in detail as well. I believe that they are having this at other hospitals.</i></p> <p><i>R11: Oh yes the open even or coaching education. So basically some soTR of session before they come in just to give them an overview.</i></p> <p><i>R23: I quite like an open day. I guess it could be called Focus Group. But for those patients that want to they can come along and have a tour of the place and see what goes on, what it's like because most people have never seen one. You know show them treatment plans and let them meet other patients that can help patients go through the same thing although that can be a hindrance in some cases but it can also be really good for them to have a hindrance in some cases but it can also be really good for them to have a support network with other people that are going through the same things.</i></p>	
Modification to Position or immobilisation (Patient) and Supporting & adjusting patients to maintain position (TR)				Shared comfort solution



Themes	Subthemes	Example of patient quotes	Example of TR quotes	Shared solutions
		<p><i>P11: They would ask. Are you comfortable or whatever and then move down a bit move up a bit. No very helpful they were doing their job.</i></p>	<p><i>R03: Oh no. I think that we've had it before where our patients can say I have this is the headrest and it is far too low. It's the sort of a slim line I'm trying, and we just put another six centimetres on. And as long as you notice I think we wouldn't accept anything drastic, but we would always be like oh yeah we'll put something else in and when they were scanned they haven't noticed it. We've given them something to hold. I think sometimes that you're sort of holding it.</i></p>	
	Adjusting position before or during treatment course	<p><i>P14: They took something out, so it wasn't so tight on the head pad.</i></p> <p><i>P22: And they made sure that if I wasn't comfortable to help by repositioning me. I have I've lost some weight so I don't know if that had any effect.</i></p> <p><i>P24: No just initially when they set me up every day. But the devices were not specifically for people like me who don't conform. Initially it wasn't quite right but after some time and your getting through the actual radiotherapy treatment itself. And then after a while it takes very little adjustment to get me into position.</i></p>	<p><i>R04: It is a carbon fibre it's not going to have give in it. So I ask a lot of patients do you have any back problems things like that to pre-empt issues. We have standard bits of kit. They can be adjusted however they are not entirely bespoke for the patient. So we try and make sure the patients get themselves into a position or we get them into a position that they can manage but it also is suitable for the radiotherapy.</i></p> <p><i>R09: Obviously if on treatment the patient tells you it's not comfortable maybe it wouldn't be changed just because you wouldn't want to change your rotations too much. Obviously you have a bit of leeway with some patients where the treatment area is further away.</i></p> <p><i>R13: 70 percent of patients usually at the start have problems and we have to make adjustments but then once they settle down I guess things improve but then it can start to go the other way when it's very long treatment.</i></p>	<p>Shared solutions between patients and TRs. There was a good balance of quotes highlighting an overlap of context and similarities of examples.</p>

Themes	Subthemes	Example of patient quotes	Example of TR quotes	Shared solutions
			<p><i>R07: Yes, we ask ourselves can this patient get through it together with the patient. The more likely they are to cope and also determine if they are in any pain and if they can tolerate the experience.</i></p> <p><i>R08: Clearly this question is going to be is she able to cope. I remember I just called the superintendent and I also called Physics and said well is there any way these patients could be scanned and be treated with both arms down.</i></p>	
	Supporting patients to cope with holding position	No quotes for this subtheme	<p><i>R10: Well the first thing that we do is question is the patient was actually capable of holding position. Okay so if they were unable to keep the arms above their heads and it was causing a lot of strain because then they would constantly stop over the course of the treatment.</i></p> <p><i>R19: I think we have occasional patients who are really distressed and uncomfortable. We're going to have to change that and that kind of patient might not be an effective position for them that means they cannot tolerate treatment and then we can have to make adjustments to their position and the immobilisation.</i></p>	TR only sub theme

Themes	Subthemes	Example of patient quotes	Example of TR quotes	Shared solutions
		<p>P12: As for comfort I was so pleased I had the flexi gel for my back. That stopped any pain that I knew that I was going to get.</p>	<p>R03: I think it is more of problematic if you've got those with comorbidities coming in that would induce more pain in other areas. We have done a lot of work really trying to improve all of our positioning so I know that we've considered that if it's a pelvic patient, we have thoughts about putting the mattress a little bit thinner abutting the remedial section just to aid a little bit more comfort light.</p>	
	Accommodating pre existing health conditions	<p>P15: I wouldn't necessarily expect that but if that was added that would be a bonus wouldn't it. And I think if you have got a back problem something under this bit of your back, the small of your back might be good. Because you are putting your legs over that raised bit aren't you.</p> <p>P16: But a little cushion may have helped with that. I've also got spinal stenosis which is sore and jumping legs and all sorts of things so...</p>	<p>R04: I'll give a physical comfort example. That's a lot of patients who I see with late stage sort of changes in the upper spine they require more padding underneath the head and therefore if we can't achieve that with a standard block scoop wedge approach I might need to make a vac bag or if they have rheumatoid arthritis in their shoulders because they can't get their arms up to the right position I try to make something custom and that's physically comfortable."</p> <p>R10: There is an ideal position but maybe the patient has a shoulder problem. I treated a patient that had suffered from polio in my childhood and then they were confined to a wheelchair. So we had to put all of that out and then move one of his arms. So there's all sorts of things involving not quite a lot of involvement in discussing this with my colleagues but my heart is kind of overcome those issues. They would usually be single treatment positioning immobilization and we are using them for this very fragile patients.</p>	<p>Shared solutions between patients and TRs. There was a good balance of quotes highlighting an overlap of context and similarities of examples.</p>

Themes	Subthemes	Example of patient quotes	Example of TR quotes	Shared solutions
		<i>P25: Um maybe it would be an idea if you know that the patient has got something else so you can help them.</i>	<i>R15: We have also had patients before in the past who haven't been able to lie flat due to things like scoliosis problems with the spine and things like that and they actually ended up creating a device that the patient could have a leg up in the air completely so that he could like foster the treatment and he was able to manage that position really well and ended up managing.</i>	
			<i>R05: I've come across many situations with patients and trying to make them more comfortable and things give me a minute to think.</i>	
			<i>R06: We tend not to have to spend a lot of time with patients. It's about pulling out all the stops but you know it's not just position you know I mean the comfort. I've been getting it right and making sure they come for treatment. They're taking the time they're in treatment and not spending ages and fiddling around and we are just being quite precise in the room getting it done.</i>	
	<b>Time to think of solutions</b>	No quotes for this subtheme	<i>R14: The limiting factor is that the time. Yes if you can spend a little bit more time at the treatment end. Getting it right to start with and if that helps the treatment go smoother. For one thing you're not wasting time on your machine. The smoother the treatment the more confidence the patient has in you. The more relaxed they are. And again the smoother the treating goes. It's like it's a win win.</i>	TR only sub theme

Themes	Subthemes	Example of patient quotes	Example of TR quotes	Shared solutions
			<p><i>R02: Open mask that would be less claustrophobic than a mask, I don't know anybody that actually does that, but you know what I mean it's like there's an alternative potentially out there I don't know. I mean you know in my career we've come a long way because we don't have to come up with plaster bandages to make them still, but we've come up with the mask and that's pretty horrendous for the patient.</i></p> <p><i>R05: If you really can't endure the treatment for this length of time and it's not comfortable enough for you then we'll have to go through the whole process of making a new mask for you.</i></p>	
	Open face or modified masks	No quotes for this subtheme	<p><i>R15: If we have had patients in the past where we've been able to cut parts out of the mask in order so they can see a bit better maybe given that a little bit of comfort means a little bit less anxious about the mask and claustrophobic and things like that. We've had patients in the past that have post-traumatic stress disorder from things that happened previously in their lives.</i></p> <hr/> <p><i>R18: I think there is a move to deliver frameless stereotactic surgery and I have treated again in a previous Trust a non-fixed frame SRS and also a frameless delivery so these patients would be in an open faced mask but because we needed to use patients surface intrafraction motion monitoring we used vision so yeah I mean the stability of the shell was very good there was like pitch issues which have been reported by the manufacturer but generally speaking we were delivering with sub millimetre accuracy.</i></p>	TR only sub theme

Themes	Subthemes	Example of patient quotes	Example of TR quotes	Shared solutions
	<b>Preparation to support maintaining position</b>	No quotes for this subtheme	<p><i>R01: We do tell the patients that when they when they get on the bed. Advise them that if they want to stretch out their arms and just have a little stretch or wriggle that's okay.</i></p> <p><i>R10: It was just for patients to lie there for 10 minutes with arms up look quite simple and basic but it really useful. We give them instructions and provide exercises to show them what they need to do for a few days. Some of the patients who were on the back for up to an hour trying to get the position right.</i></p> <p><i>R19: Okay so exercises and then practice the breath hold as well suppose. And of course, in regard to audio I guess you can't play any music to them for obvious reasons. Patients that are doing a breath hold can have music.</i></p>	TR only sub theme
	<b>Prioritising Patient Comfort with Soft Pads or Mattress (Patients) and Prioritising patient comfort with soft pads or mattress (TRs)</b>	<p><i>R12: I did discuss with you in that little room about making it more comfortable on your back, didn't I? It could be lined with something soft.</i></p> <p><i>P15: Maybe the arm thing could be a bit more cushioned.</i></p> <p><i>P16: Well I suppose a small rectangular cushion of some sort maybe. It would be my lumbar spine.</i></p>	<p><i>R01: So that's always been our aim from the very beginning to make the patient as comfortable as possible so we don't always use what would seem to be the most restrictive immobilization because it's not always all that comfortable.</i></p> <p><i>R03: The protocol for the patients is that are set up if they do a lot of pelvic or thorax or even the spine, they are always on either a comfortable mattress or a thick foam of about five centimetres.</i></p> <p><i>R05: We try to make it as comfortable as we can for them. We had a patient, I think it was the way that she was immobilized. Actually, when she came downstairs for treatment, she was a lot flatter. She wasn't seated because being flatter for her treatment on that day. It was better for her than what she was positioned with.</i></p>	Shared solutions between patients and TRs. There was a good balance of quotes highlighting an overlap of context and similarities of examples.



Themes	Subthemes	Example of patient quotes	Example of TR quotes	Shared solutions
		<p>P19: What about something on the bed that would softly clamp your head or something? I don't know. A bed that could move to adjust for comfort and positioning.</p> <p>P11: "No, they were very helpful. Are you comfortable or whatever and then move down a bit move up a bit. No very helpful they were doing their job.</p> <p>P19: Yeah. As I say the TRs were very patient orientated and they kept saying are you comfortable with... And if it wasn't comfortable they took it off and started again. Where you put your arms it's a bit hard, isn't it? I suppose it's got to be, hasn't it? Unless it's got to be hard for your arms, I guess it could be lined with something soft I suppose.</p>	<p>R11: But I'd like to say that sometimes we have patients that come with spine this is really deformed and they have to have lots and lots of pillows and things under that head.</p>	
	<b>Holding objects to maintain position</b>	No quotes for this subtheme	<p>R13: Yes just sort of hold things of sentimental might be of the grandchild, a piece of jewellery or something like it."</p> <p>R15: We have these small rings, kind of squishy and what we use them for particularly are for patients where are you treating stuff like that those elbows can get in the way or if they've got their hands on the chest. We used to use them for patients to hold under their chin so they kept their arms are up a bit more out of the way but we actually found the patients struggling with something maybe a bit anxious and fidgety if you ask them if they want something to hold on to give them one of those rings to hold on so that it really helps because it gives them something to kind of focus on something to squeeze something to hold. That has been useful in the past as well.</p>	TR only sub theme

Themes	Subthemes	Example of patient quotes	Example of TR quotes	Shared solutions
			<p>R19: Also, we will ask what about holding something clasping something.</p> <p>R20: we've done things where we can have a string they have a hold one end and their carer can hold the other end and you can pull the string just so you can feel that somebody is there.</p>	
Supported coping	Audio-visual distraction	<p>P01: They make you feel supported and tell everything that there going to do like. They say we are leaving the room now, then they'll tell me what stage. Through the microphone. I, am actually frightened to open my eyes. Cos if I open my eyes the laser might go.</p> <p>P03: The music playing is a great help to me. If its something I really enjoy, once they had the greatest showman and I was singing along in my head and I was gone. The time went in no time at all. But the music is not always so good. In which case I try to think about nice things, holidays to come. Things like that.</p> <p>P04: Often there's music on and often it's the music I'll ask for which is great as well.</p>	<p>R01: We also give the patients music to listen to if that's what they'd like to which is very sort of standard thing in radiotherapy treatments. Generally the lights are up in the room but if patients do feel that they'd like to go to sleep and they want to rest their eyes and the glare and lights we can tap we can turn them down. The other thing that we have in all of our treatment rooms is we've got a sort of a light tunnel a light installation exactly what you'd call it, a light box above the treatment couch.</p> <p>R05: We always say we try and talk them through it. I apologise over the microphone and say, we're really sorry. We're almost there.</p> <p>R06: So they're on the bed for like 40 minutes but we spend a lot of time talking to them coaching them through microphones.</p>	<p>Shared comfort solution</p> <p>Shared solutions between patients and TRs. There was a good balance of quotes highlighting an overlap of context and similarities of examples.</p>

Themes	Subthemes	Example of patient quotes	Example of TR quotes	Shared solutions
		<p>P07: <i>There was music going which sometimes I almost blanked it out I think. If it was something I specifically liked I may keep an ear on it. But, I wasn't that bothered about the music.</i></p> <p>P18: <i>All I can say is look up at the sky for 90 seconds and then the machine moves. And then another two minutes to the machine moves over.</i></p>	<p>R08: <i>I don't think we always did anything about the lights. But obviously like I'm thinking now yeah holy shit. I think some people might like the lights down. It's like when you when you just assume the person would prefer the lights on and walk out and assume that.</i></p> <p>R17: <i>So I will speak to them over the intercom as well to count down.</i></p> <p>R18: <i>We had movies that were of nature scenes or whatever. So that was quite nice for them. We had like a library of DVDs or we would give them information about their treatment.</i></p> <p>R24: <i>Yeah, in general we try out music on backgrounds, or silence.</i></p>	
	<b>Empathetic Support (Patients) and Empathetic approaches (TRs)</b>	<p>P03: <i>But I mean you know your not going to suffocate, and anytime you can of course wave and they will stop. So, the key thing really is the reassurance that your given by the radiotherapists because they know exactly what's happening, they know how you might react. I think they have been really good here. Explaining what's going on and, but I mean, you know your not going to suffocate, and anytime you can of course wave and they will stop. So, the key thing really is the reassurance that your given by the radiotherapists because they know exactly what's happening, they know how you might react. I think they have been really good here. Explaining what's going on and reassuring.</i></p>	<p>R03: <i>We always have blankets because I've seen people on the machines who feel exposed and cold. Obviously the more nervous you must be warm enough. I think it doesn't mean you could be massaging but sometimes the hand holding I will always provide support .But we felt within our scope of practice if it means that we have an extra person in the room while we're setting up just talking to them and then we have while we're matching images or somebody is just chatting over the microphone.</i></p>	<p>Shared solutions between patients and TRs. There was a good balance of quotes highlighting an overlap of context and similarities of examples.</p>

Themes	Subthemes	Example of patient quotes	Example of TR quotes	Shared solutions
		<p>P05: <i>Just their professionalism and their calmness. And their friendliness that's the bit that really struck me. Right from the word go that took all the worries from coming in and getting it done. And that's was it was nice to see them.</i></p> <p>P17: <i>They came to talk to me and held my hand, the mask felt very tight to start off with and obviously you are not used to such things.</i></p>	<p>R05: <i>Sometimes the patients from time to time want to us to hold their hand.</i></p> <p>R06: <i>But yeah talking about a lot of the tactile things. We have a lot of things for children and sometimes we exclude the adults. Okay so we've got the comfort of the teddy bear with one patient in terms of touch and things like that. You have to have patience.</i></p> <p>R07: <i>I think using some of the stuff we use for paediatrics such as a string fed into the treatment room, if we think more about the environment that would really help.</i></p> <p>R17: <i>We also kind of have squeeze stars as well. If there's anything else that they want to hold off also.</i></p> <p>R02: <i>You know I think sometimes people think my God I can't do this because it is not absolutely perfect. Well you know sometimes some treatment is better than no treatment. You know that requires you to know a little bit about the person.</i></p> <p>R06: <i>So adapting individually, tailoring everything to with SABR or SRS 40 minutes more of a challenge for in terms of managing comfort and for the patients to try to keep that position.</i></p> <p>R07: <i>I think staff wellbeing as well as the place and time is important. Then you've got more time to communicate with the patient. Build a rapport. Obviously, we wish people would be the best that they can for patients.</i></p>	

Themes	Subthemes	Example of patient quotes	Example of TR quotes	Shared solutions
			<p>R09: <i>In terms of like with the patients just ask them. They're the ones who are lying there. They are the only ones who really know how it feels. Every single patient we see is an individual and just ask them more.</i></p>	
		<p>P01: <i>Definitely a tea machine, even a little bit of music. Before we go in, liven it up a bit. Not like a disco. You would feel warmer. Its got a warmer feel in the main waiting area than in the radiotherapy waiting area.</i></p>	<p>R14: <i>Well one of our treatment centres has got moved and it's basically got sofas and all sorts of decoration to relax patients including mood lights.</i></p>	
	Hospitality (Patients) and Hospitality & Aesthetics (TRs)	<p>P16: <i>I think the atmosphere they create that they're smiley and welcoming, that's comforting isn't it. As I say they were welcoming and courteous and light-hearted I mean I didn't feel I was coming into some sort of death sentence or anything like that.</i></p>	<p>R15: <i>I think it's something that maybe hasn't been considered as much as it should be. I think that's something we should consider more is the environment before a patient even gets into the treatment room. I mean like what it's like actually in the waiting area. I mean in terms of visually and audio I think it's something going on that's a bit more relaxing might be a bit difficult when you're in a hospital as a patient, but I think visually it's quite important. I suppose it's different from patient to patient. Again, what really matters taking that into account what patients think is important.</i></p> <p>R01: <i>And we always get them to sit and have a cup of tea afterwards in the waiting room just to make sure they're feeling okay before they leave the building.</i></p> <p>R12: <i>Everyone's drinking coffee. I know even if you can get the Wi-Fi for all these things. People expect nowadays wherever they go. I don't know about you but they don't want magazines anymore on the tables, they're listening to and watching films in the waiting room they're escaping. Brilliant.</i></p>	<p>Shared solutions between patients and TRs. There was a good balance of quotes highlighting an overlap of context and similarities of examples.</p>

Themes	Subthemes	Example of patient quotes	Example of TR quotes	Shared solutions
			<p>R02: <i>I suppose head neck patients or anybody in a shell which is you know a whole different league in terms of comfort. Patients often talk about them digging into their neck and stuff, not everybody's neck is the same size and shape. People have daily Lorazepam to get through treatment in a shell."</i></p>	
	Pharmacological interventions	No quotes for this subtheme	<p>R03: <i>"But I would say you do notice that these are the patients that might have slightly more prophylactics or pain relief we will have these prescriptions waiting just before they start, anticipating that they might be slightly more uncomfortable it might require some management.</i></p> <p>R04: <i>We have Valium we had Diazepam. We make sure the patient can get through that for treatment because we had gotten more open treatment of the breast treatments and nothing's going too close to the face or head for treatment.</i></p> <p>R12: <i>Some of the sleep medications, we try that at the time but in my experience I think it's such a small dose to start with five milligram and then they got through.</i></p>	TR only sub theme
	Referral to external services	No quotes for this subtheme	<p>R02: <i>It wouldn't have to be you know you don't want to do the complete works of Shakespeare, but they could be you know be mindful meditation or you know relaxation type or you know that kind of realistic alternative.</i></p> <p>R03: <i>Absolutely, you always offer complimentary therapies to sort of try and go alongside. They always offer things like that. I really wish there was some way we could have a psychiatrist on hand because I think that it's a major problem.</i></p>	TR only sub theme

Themes	Subthemes	Example of patient quotes	Example of TR quotes	Shared solutions
			<p>R07: <i>We try to take their feelings on board and acknowledge spirituality and faith. I believe in Psycho policy and referring when needed.</i></p> <p>R13: <i>We used a play specialist therapy could be considered a kind of therapy. But not so much for the adults.</i></p>	
	Self-initiated Coping (Patients) and Percieved Coping Techniques (TRs)	<p>P06: <i>But the last few weeks I've had a touch of sciatica in my back so some days has been more uncomfortable than others. It's a lot better than it has been. As I say its for your own good so if you can put up with some discomfort for 15 minutes. I just don't complain, I just let them get on with it, if that's how they want me then that's how they get me and I won't complain. I am not a complaining type although many would. On this occasion they know their jobs and its got to be done.</i></p> <p>P14: <i>Well that was the first time I panicked was day one but after that I was fine. So you get used to it and yes I thought to myself you can do this, man up.</i></p> <p>P21: <i>No, but it was okay I coped with it. It wasn't that bad. It was a little struggle, but I got used it to it over time and let everyone do their work.</i></p> <p>P22: <i>Well it was a little intimidating but you had to survive and radiotherapy was the way to do that.</i></p>	<p>R01: <i>Some people do just want to drift off and go to sleep.</i></p> <p>R05: <i>If you really can't endure the treatment for this length of time and it's not comfortable enough for you then we'll have to go through the whole process of making a new mask for you. And sometimes when they realize that they're just like okay I'll just go I'll just get on with it then.</i></p> <p>R23: <i>They know it's not that comfortable but actually they're aware of it. They know how long it's going to be. And I think if you knew why something is happening why you've got to do it then that is okay.</i></p>	Shared solutions between patients and TRs. There was a good balance of quotes highlighting an overlap of context and similarities of examples.

Themes	Subthemes	Example of patient quotes	Example of TR quotes	Shared solutions
	<b>Self-initiated distraction techniques (Patients) and Percieved Self-initiated distraction techniques</b>	P01: <i>Oh my mind just goes off onto what I'm having for dinner although my mind does wander, I don't just sit there and think at machine. If I did that I would have the treatment.</i>	R02: <i>But yes, people are stressed and anxious. And you have evidence to suggest that you know mind over matter.</i>	Shared solutions between patients and TRs. There was a good balance of quotes highlighting an overlap of context and similarities of examples.
		P06: <i>That's it, I just stare directly ahead and focus on one thing. And just let people get on with what they've got to do, I literally just zone myself out of it.</i>	R05: <i>I had a few experiences recently with patients who've been extremely anxious and wanted to know the Monitor units how many they've had so far out of their total. Counting it down you know you've had to monitor 21 units and so forth because they find that reassuring.</i>	
		P15: <i>Yes it is nice that there is the count down and I know I can do it now but it was only the first two or three times I thought I hope it is going to be easier. It did reassure me if I couldn't do it if I had to stop that would be alright, they would be aware of that. They were very helpful."</i>	R07: <i>Others that take themselves to somewhere in their minds, but that's on an individual patient basis.</i>	
		P16: <i>I suppose I just listened to the counting.</i>	R11: <i>The patients sometimes use stress balls. We had the patient bringing in their own stuff. And then we had these extra. Which patients could just squeeze.</i>	
		P18: <i>I listened to the machine; I listened to the noises that were going on so I knew what's happening. Okay so I don't really know what's happening to me yet I have a bit of a sense of its working.</i>		



Themes	Subthemes	Example of patient quotes	Example of TR quotes	Shared solutions
		<p>P03: <i>Yes, I called it 'zenning' out. What I tend to do is take a deep breath, then the mask goes on and I kind of take my mind elsewhere really. I take my mind to my happy place. Or think about something nice or just concentrate on the lyrics if it's a really good song. But apart from that no.</i></p> <p>P12: <i>Because of my Christian faith there were sometimes when I was praying and most of the time I shut myself off.</i></p> <p>P15: <i>I do but I am a Christian. So I pray so I think my first, before my first session one they asked me to breath in for twenty seconds that felt like an awfully long time and I don't know whether I can do that so I built up a slight panic about that now I think I can go on a lot longer. So the first few times I could feel that panic rising and then of course it is much worse isn't it, so I just concentrate on a verse or a prayer.</i></p>	<p>R04: <i>Patients have tokens with themselves. So lucky heather or whatever they have on themselves you know whatever they want to bring in to make sure they have tokens to remind themselves of what's happening. They can have that on them if they want to make themselves feel a bit more grounded. I think they want this kind of thing. I think that it becomes a kind of spiritual thing. You know I've had one lady who brought in her grandson's toy to make sure because the grandson said this will keep you safe now. And so, it was my understanding is that Shes' having radiotherapy and she bought that into the room to make sure she's got something to remind her of the family and what's happening.</i></p> <p>R08: <i>Obviously, it's like if you see the patient struggling even if they want to bring in quite a lot of religious people back home would actually bring some images. So that's quite traditional back in Portugal and a cross somewhere on the chest or around the neck. We would have to say sometimes, actually we will have to take that necklace off and you could see that especially back home like there's a lot about these religiously come from Portugal and I especially liked them a bit more like old ladies they would get like super upset and to offer them to hold it was a good compromise.</i></p> <p>R09: <i>I mean it was just one example, it could be something from almost like maybe a religious background we would promote like we will promote a Roman Catholic you can bring your rosary beads or you know often we send our patients our Muslim patients would want the Koran play back to them to get I'm not sure if this really fits into comfort but having female staff if they really need.</i></p>	<p>Shared solutions between patients and TRs. There was a good balance of quotes highlighting an overlap of context and similarities of examples.</p>

Themes	Subthemes	Example of patient quotes	Example of TR quotes	Shared solutions
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R13: *People often have their music on if they want to get more people would bring in meditation beads.*

Attribute	n	Mean (SD)
Age (All)	25	64 (13)
Mean interview time (minutes)	970	38.8 (13)
		Percentage (%)
Female	12	48%
Male	13	52%
Cancer site & diagnosis		
Head and neck		32%
Oropharyngeal SCC	5	20%
Salivary gland cancer SCC	2	8%
Haematological Lymphoma	1	4%
Thorax		36%
Breast Invasive ductal cancer	5	20%
Lung Adenocarcinoma	1	4%
Lung SCC	1	4%
Oesophageal SCC	2	8%
Pelvis		32%
Gynaecological Cervical SCC	1	4%
Gynaecological Uterine Adenocarcinoma	1	4%
Prostate Adenocarcinoma	6	24%
Radiotherapy Px & time on treatment couch (Mean minutes & SD)*		
30Gy, 15#, 6Mv	2	8%
40.05Gy,15#, 6Mv	4	16%
40.05Gy,15#, 10Mv	1	4%
45Gy, 25#, 6Mv	1	4%
50Gy, 25#, 6Mv	1	4%
55Gy, 25#, 6Mv	1	4%
60Gy, 20#, 6Mv	6	24%
60Gy, 30#, 6Mv	2	8%
66Gy, 32#, 6Mv	1	4%
66Gy, 33#, 6Mv	3	12%
70Gy, 35#, 6Mv	3	12%

Footnote – SD = standard deviation, SCC = squamous cell carcinoma, \*Treatment time = cone beam computed tomography started to treatment completion.

*Electronic material 4 Therapeutic radiographer characteristics*

<b>Attribute</b>	<b>n</b>	<b>Mean (SD)</b>
<b>Age (All)</b>	25	35 (9)
<b>Years' experience</b>		11 (9)
<b>Mean interview time (minutes)</b>	580	23.2(11)
		Percentage (%)
<b>Female</b>	20	80%
<b>Male</b>	5	20%
<b>Role</b>		
Lead practitioner	3	12%
Advanced practitioner	5	20%
Senior practitioner	14	56%
Practitioner	3	12%