# <u>Evaluation of a Urology Specialist Therapeutic Radiographer implemented Radiotherapy Pathway</u> for Prostate Cancer Patients

#### **Abstract**

#### Introduction

The role of the Urology Specialist Therapeutic Radiographer (USTR) was introduced to support a busy NHS uro-oncology practice. Key objectives were to improve patient preparedness for and experience of radiotherapy, focussed on prostate cancer. Pre-radiotherapy information seminars were developed, and on-treatment patient review managed by the USTRs. To evaluate the revamped patient pathway and direct further improvements, a patient experience survey was designed.

# **Methods**

An 18-point patient questionnaire was produced. The questionnaire captured patient experience and preparedness; pre, during and at completion of treatment. The patient population comprised men receiving radiotherapy for primary prostate cancer within one UK Trust.

#### **Results**

Two-hundred and fifty-one responses were received. Seventy-three percent of patients felt completely prepared for radiotherapy, higher in those who attended a seminar (77%) compared to those who did not (61%). Eighty-nine and eighty-six percent of respondents were completely satisfied with verbal and written information received prior to commencing radiotherapy respectively. Seventy-three percent of responders would have found additional resources helpful.

With respect to on-treatment clinics; eighty-five percent were seen on time or within 20 minutes, eighty-three percent felt fully involved in decisions regarding their care and ninety-one percent reported complete satisfaction with the knowledge of the health care professional reviewing them.

The follow-up process was completely understood by eighty-eight percent and overall patient experience rated excellent by eighty-five percent of responders.

#### Conclusion

The revamped pathway implemented by USTRs has achieved high levels of satisfaction at all stages of the prostate patient's radiotherapy. By diversifying the format of information giving, the USTRs hope to further meet the information needs of patients.

# **Implications for practice**

Validation of a prostate cancer radiotherapy pathway which employs USTRs and utilises a patient preparation seminar. This model could support the introduction of Specialist Therapeutic Radiographers in other Trusts and treatment sites.

#### Main text

#### Introduction

The prevalence of prostate cancer is rising yearly<sup>1-4</sup> putting increasing demand on the Radiotherapy workforce. Radical prostate radiotherapy courses delivered at The Royal Marsden NHS Foundation Trust reflect this, with cases rising from 586 in 2015 to approximately 900 in 2019. In 2015, the Trust performed worse than expected on the General Medical Councils (GMC) National Training Survey. One issue raised was an inappropriate workload compromising time for Clinical Oncology registrar training.

Innovative solutions were essential to better manage the expanding urology workload. The Royal College of Radiologists (2012)<sup>5</sup> guide to job planning supported the delegation of tasks from Clinical Oncologists to other health professionals to manage workload more effectively. Therapeutic Radiographers skill set includes radiotherapy delivery, cancer management, communication skills, side-effect management and 3D anatomy knowledge, making them well equipped to support such a service.

In early 2016, three Urology Specialist Therapeutic Radiographer (USTR) roles were developed. A 1.2 whole time equivalent (WTE) role at the Trust's Sutton department, fulfilled by two 0.6 WTE job sharers and a 0.5WTE role working between both the Sutton and Chelsea branches of the Trust. Although the employment of specialist radiographers was new to the Trust at the time, such role development is not a novel concept. A primary aim of the of the four-tier service model introduced by the Society and College of Radiographers in 2000 was to extend Radiographer roles; advance practice; and encourage lifelong learning.<sup>6</sup>

The new posts supported the whole uro-oncology radiotherapy practice, but due to patient numbers most of the focus was in prostate cancer. The ratio of prostate radiotherapy patients is roughly 2:1 across the Sutton and Chelsea sites respectively. Each USTR underwent six months of formal and informal training, led by the Uro-Oncology Consultants and Urology Nurse Consultant prior to working autonomously. The primary responsibilities of the USTRs are presented in **Figure 1**.

In September 2017, an evaluation of the prostate service reported that 55% of on-treatment clinic reviews and 30% of radiotherapy contouring was being completed by the USTRs. Over 95% of fiducials were inserted by a USTR. In the same year no serious issues were raised in the GMC National Training Survey.

Improving patient preparedness for, and experience of, radiotherapy was a key objective of the USTRs. A pre-existing optional monthly patient seminar, delivered by a Clinical Nurse Specialist (CNS), had been established. This was offered to patients about to start the prostate radiotherapy pathway. Re-design and development of this resource was led by the USTRs, enabling further specialist information about radiotherapy to be included. In addition, this was incorporated as a scheduled appointment for all patients. The content of the updated patient preparation seminars is presented in **Figure 2.** 

To evaluate the revamped prostate cancer radiotherapy pathway, implemented by the USTRs, a patient survey was developed to elicit their experience of the service and to act as a benchmark for further service development.

Figure 1. Urology Specialist Therapeutic Radiographer Primary Responsibilities

1.2 WTE Sutton	0.5 WTE Chelsea/Sutton
<ul> <li>Pre-radiotherapy seminars</li> <li>On-treat prostate and bladder patient review and management (Sutton)</li> <li>Prostate CTV contouring</li> </ul>	<ul> <li>Prostate fiducial marker insertion</li> <li>Pre-radiotherapy seminars</li> <li>On-treatment prostate patient review and management (Chelsea)</li> </ul>

Figure 2. Content and order of the prostate preparation seminars. Seminars delivered by USTR, Urology Support worker and patient representative.

Famililarisation	Practical Preparation	Side effects	Prehabilitation
<ul> <li>Radiotherapy, what is it?</li> <li>Radiotherapy delivery</li> <li>Radiotherapy equiptment: linear accelerator and CyberKnife</li> <li>A past patient's perspective</li> </ul>	<ul> <li>Schedule of appointments</li> <li>Appointment timings</li> <li>Fiducial marker appointment; antibiotic prescription and medication management</li> <li>Bladder preparation</li> <li>Bowel preparation (enema use)</li> </ul>	<ul> <li>Short term side effects</li> <li>Late side effects and their risks</li> <li>Management of side effects</li> <li>Radiotherapy review appointments and follow up</li> </ul>	<ul> <li>Good hydration habits</li> <li>Pelvic floor exercises</li> <li>Healthy eating advice</li> <li>Exercise advice; delivered by a past patient and exercise advocate</li> </ul>

# Methodology

An 18-point patient questionnaire was developed. Questions were developed through uro-oncology multi-disciplinary team discussion, led by the USTRs. The questionnaire was designed to take less than 10 minutes to complete in order to minimise patient time burden. It was presented as a service evaluation to the Royal Marsden NHS Foundation Trust service evaluation committee on the 5<sup>th</sup> April 2017. Patient and public involvement review was conducted in concordance with the service evaluation process; this included readability and comprehension analysis of the questionnaire. Modifications based on this review were implemented and the questionnaire finalised on the 18<sup>th</sup> May 2017. The questionnaire (Appendix A) was designed to capture patient experience and preparedness; pre-treatment, during treatment and at completion of treatment.

A sample size of 250 patients was set, this sample size accounted for approximately 50 percent of the annual prostate patient cohort in 2017 and was therefore deemed representative of the population. Questionnaires were given to patients across both sites having radiotherapy for their primary prostate cancer. Questionnaires were given to patients either at their last on-treat review clinic or posted out to patients shortly after completing treatment. To minimise the risk of patients being given duplicate questionnaires, for each clinic, one USTR was assigned distribution

responsibility. A covering letter was attached to the front of all distributed questionnaires, to explain its purpose. Patients were provided with a pre-paid envelope to return the completed questionnaire. Completion of, and returning the questionnaire was voluntary, anonymous and constituted informed consent.

On receiving a completed questionnaire, the USTR opening the envelope assumed responsibility for inputting the data to an Excel spreadsheet. An independent check was then completed by a second USTR to minimise the risk of transcription error. Paper questionnaires were kept and stored securely. Descriptive statistics are used to present the finding.

# **Results**

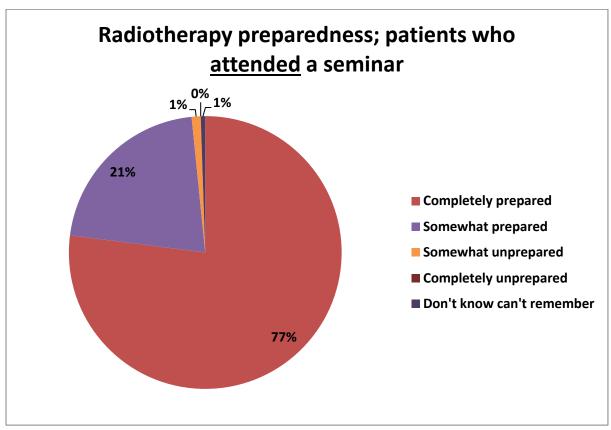
251 responses were collected between June 2017 and November 2019. The target number was set at 250 but response numbers 250 and 251 were received by the USTR at the same time; to avoid selection bias both have been included for analysis. The number of questionnaires disseminated was not recorded therefore a response rate cannot be calculated. Both Trust sites were evenly represented; 51% and 49% of responses from Sutton and Chelsea patients respectively.

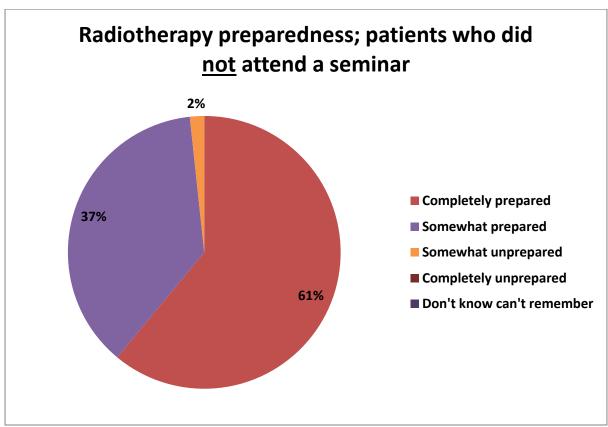
#### **Preparedness**

Seventy-three percent of patients who responded (n = 184) felt completely prepared for starting radiotherapy. Twenty-five percent (n = 62) felt somewhat prepared, one percent (n = 3) felt somewhat unprepared and one percent (n = 2) couldn't remember how they felt when starting radiotherapy.

One hundred and eighty-seven patients who responded had attended a prostate preparation seminar. A higher percentage (77%) of those who attended a seminar felt completely prepared, in comparison to non-attending patients (61%), see **Figure 3**.

Figure 3. Pie charts demonstrate patients' preparedness in relation to attendance vs nonattendance of a prostate preparation seminar.





#### Information received

Eighty-nine percent (n=223) and eighty-six percent (n=216) of respondents were completely satisfied with the verbal and written information received prior to commencing radiotherapy respectively. With regards to verbal information, eleven percent (n=27) were somewhat satisfied, and one person couldn't remember. In consideration of written information, two percent (n=4) of patients stated there was too much information, 11 percent (n=28) stated there was too little information, two patients couldn't remember, and one did not answer.

Although satisfaction with current information was high, seventy-three percent of respondents (n=183) identified additional resources which they would have found helpful when preparing for radiotherapy. Selection of multiple resources was permitted. A virtual demonstration of the radiotherapy treatment room and delivery was most frequently requested (n=115), see **Figure 4** for full results.

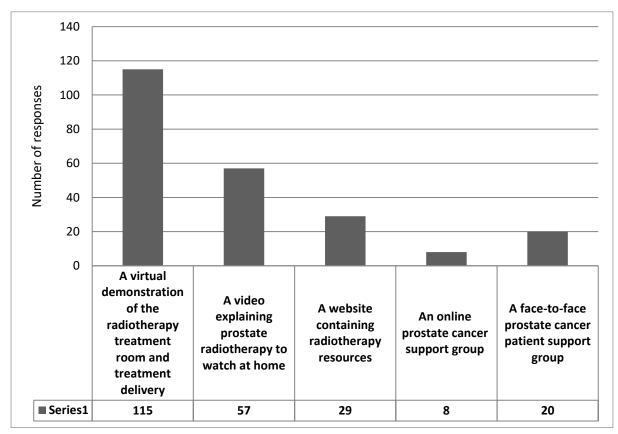


Figure 4: Additional resources patients would have found helpful when preparing for radiotherapy

#### **On-treatment clinics**

Patient clinics are 20 to 30 minutes long and scheduled fortnightly during treatment, with increasing frequency if symptoms are troubling. Ninety-five percent (n=239) of patients stated they were reviewed regularly during radiotherapy, three percent (n=8) said they were not reviewed regularly, one respondent didn't remember and three left this blank. Eighty-five percent of patients (n=213) identified that they were seen on time or within 20 minutes of their appointment. Ten percent (n=24) responded between 20 minutes and 1 hour, one stated more than an hour, three didn't know and 10 left it unanswered.

Ninety-one percent of responders (n=229) were completely satisfied with the length of review time received to discuss issues. Five percent (n=12) were somewhat satisfied by appointment length and four percent (n=10) did not answer. Most patients felt fully involved in decisions made regarding their care; eighty-three percent (n=209). Ten percent (n=24) felt they were involved to some extent, three respondents felt they weren't involved, two of which wanted to be and one who did not wish to be. Four could not remember and eleven did not answer this question.

Nearly all patients (91%) were completely satisfied by the knowledge of the healthcare professional reviewing them, see **Figure 5**.

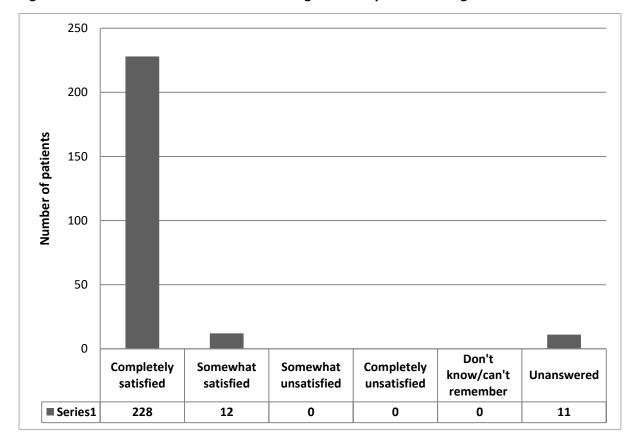


Figure 5: Satisfaction with the level of knowledge shown by the reviewing individual

#### Identification

On-treatment clinics are run predominantly by USTRs, who see most of this patient group. Clinical nurse specialists (CNS) do not provide cover at Sutton but do support the Chelsea clinic more routinely. Reviewing healthcare professionals were identified as USTRs by fifty-one percent (n= 130) of respondents while CNSs were identified by thirty-nine percent (n= 47) of respondents. Forty-seven of the CNS responses were from patients treated at the Sutton branch; these patients would not have been reviewed by a CNS during treatment. Six patients stated they saw a doctor, three identified all three professional groups, four could not remember and nine left this unanswered.

#### Follow up information

Respondents largely comprehended follow-up and aftercare information given to them, eighty-eight percent (n= 220) stated they completely understood how they would be followed up. Ten percent (n= 26) somewhat understood, two percent (n= 4) were somewhat confused and one patient left

this unanswered. Ninety-eight percent (n =245) of respondents knew who to contact if they had questions or concerns following radiotherapy.

Ninety percent of respondents (n=225) were having concomitant hormone therapy. Many patients can be confused regarding hormone therapy duration and frequency and individual's regimes should be discussed and clarified. Ninety-two percent of patients on hormone therapy (206/225) clearly understood the hormone duration required. Seven percent (15/225) did not understand their hormone duration and four patients left this unanswered.

Overall patient experience was very positive, eighty-five percent (n=213) rated their experience as excellent (5/5). Thirteen percent (n=33) and two percent (n=5) of responses rated their experience as very good (4/5) or good (3/5) respectively.

#### **Discussion**

A limitation of this work is that the total number of questionnaires given out was not recorded, hence response rate cannot be generated. If repeating this process, the number of allotted questionnaires would be securely logged. The extended time period of data collection, June 2017 to November 2019, suggests poor response rate as patients treated in this time period exceed 1000. However, the extended period of data collection is thought not to relate to poor response, rather to a period from January to December 2018 where the USTR workload increased and sending out questionnaires could not be prioritised. In October 2018 two further part-time USTRs were employed to support the workload, this facilitated revival of the service evaluation and the distribution of questionnaires was resumed in February 2019. Most data was collected over a 15-month period. The patient pathway did not significantly alter over this period.

The second limitation is that there is no reference data to compare patient satisfaction to. The high levels of satisfaction reached cannot be attributed to the pathway revisions introduced, as previous patient satisfaction levels may have been equally as high. Results presented simply validate the current service and provide future direction. The authors advise others, implementing similar improvement projects, to capture patient experience data at baseline to provide a benchmark upon which to build.

# **Preparedness**

Patient preparation prior to radiotherapy is key to successful oncological management, even more so when treating sites where organ motion impacts reproducible patient set-up, as appreciated in prostate cancer. In line with research implementing head and neck pre-radiotherapy seminars, attendance of the prostate radiotherapy seminar did realise higher rates of complete preparedness for radiotherapy compared with those not attending, 77% versus 61%. However, we had anticipated seminar impact would be greater than a 16% increase in preparedness.

Impact may have been lessened as patients not attending the seminar were receiving one-to-one 'preparing for radiotherapy' information from USTRs, although without visual aids. This was typically done in line with the doctor-led consent clinic. Although the level of preparedness was good using this one-to-one approach, the time burden on USTRs is markedly greater than delivering a seminar. One-to-one consultation takes approximately 20 minutes whereas a seminar takes 60 minutes but can reach out to ten patients at once. Scheduling attendance at a seminar in advance of radiotherapy consent also allows time for patients to process information, consider the individual impact of treatment and formulate pertinent questions to address during consent. This streamlined

information giving approach removes time pressure from the consent appointment, in turn this promotes good relationships with healthcare professionals and patient participation in care.<sup>9</sup>

Despite incorporation of the prostate seminar into the treatment pathway, not all patients attended. Reasons for not attending were not captured however anecdotal evidence suggests time, travel, caring responsibilities and health concerns are the main obstacles. Barriers to attending a group are more often practical<sup>10,11</sup>; providing alternative delivery methods must therefore be explored to foster equality and diversity of information giving. This need was identified by the seventy-three percent of patients who responded that additional resources to aid preparation would have been helpful. This is not unexpected; as many as 80% of patients have unmet supportive or information needs at some point in their pathway<sup>11</sup> which can impact negatively on quality of life outcome.<sup>12,13</sup>

No one type of information format or style suits all patients,<sup>14</sup> this is seen in the spread of responses regarding helpful additional resources. The most requested resource was a virtual demonstration of the radiotherapy treatment room and delivery; in response to this we have scripted a storyboard and are in discussion with the Trust's communication team to develop a video following a patient through their radiotherapy pathway. Commercially available virtual learning environments<sup>16</sup> could also be utilised, if available to centres. In addition, pre-recorded material presents the opportunity to translate information into multiple languages, include sign language, to broaden inclusivity.

As an interim measure short videos have been developed covering the content of the prostate seminars and the prostate consent process. The videos are delivered by the Consultant Clinical Oncologists, USTRs, Macmillan Support Workers and a previous patient. It is hoped that by providing information in multiple formats we help meet the information needs of as many patients as possible.

#### On-treatment clinic

On-treatment review clinics are held within the radiotherapy department and are scheduled ideally to coincide with a patient's treatment time. The advantages of this approach are; patients are comfortable with the environment, delays getting to clinic are avoided, the patient only has to make one journey to the hospital on clinic days and the patient isn't left lingering in the hospital for extended periods. This set-up proved effective in achieving 85% of patients being seen within 20 minutes of their scheduled appointments.

High patient satisfaction with the level of knowledge shown by the reviewing individual is a common reflection in other studies examining radiographer-led review. 14,17,18 It supports the suitability of Therapeutic Radiographer professionals to assume advanced roles. Prior to the implementation of this service all patients were reviewed in doctor-led clinics encompassing new-referrals alongside on-treatment and follow-up patients. Due to the complexity and diversity of this patient load, patients often experienced long waiting times. Subtracting on-treatment patients from these clinics has streamlined the on-treat review process, freed up Clinical Oncologist's time to manage more specialist consultations and undertake teaching/training which was one of the primary drivers for implementing change and USTRs. It has also opened more slots for new-patient referrals.

# Identification

Although patients were satisfied with the knowledge of the reviewing individual it became apparent in the results that many were not able to correctly identify their profession. Fifty-two percent of patients stated they were clinically assessed by a USTR, although not quantifiable it is proffered that the actual number should be close to eighty percent. This result is not unexpected as a 2016 study

reported that radiographers appear as anonymous allied heath technicians.<sup>19</sup> Although the USTR team are careful to introduce themselves, wear identification badges and the same uniform as treatment radiographers they must address this finding further as professional identify is integral to defining individuals' values, actions and interactions.<sup>20</sup>

National campaigns to raise the profile of Therapeutic Radiographers, most recently the second phase of the 'We Are the NHS' recruitment campaign<sup>21</sup> have tried to address this issue but local and self-promotion are essential. Steps have been taken to better identify professions using a large uniform identification board clearly located in the Trust's radiotherapy departments. During the prostate seminar and recorded information videos more time has been added to introduce individuals and their roles. The USTRs have also hosted departmental journal clubs to educate the wider team on their role and responsibilities. There is however much work still to do.

#### Follow-up information

Preparing patients to transition from treatment to post-treatment care supports self-management of symptoms in survivorship. <sup>22</sup> Post-treatment side-effects, managing hormone therapy, follow-up processes and lines of communication are covered both in the seminar and the patient's final ontreatment clinic. High levels of comprehension in this area support the value of repeating information to improve patient recall<sup>23</sup> and understanding. The timely giving of such information, can reduce patients concerns and fear for the future. <sup>24</sup>

The revamped prostate radiotherapy pathway is providing a high level of care with 85% of responses rating their experience as five out of five. USTRs implemented this pathway, supporting the view of both Prostate Cancer UK and The Society and College of Radiographers who endorse the role of USTRs as vital in offering best care, treatment and support to prostate patients.<sup>24</sup> With the backing of the multi-disciplinary uro-oncology team remaining essential to providing a robust, cohesive service.

#### **Conclusion**

The revamped prostate cancer radiotherapy pathway, implemented by the USTRs, has achieved high levels of satisfaction at all stages. Unmet patient needs were identified in the process; expanding the format of information giving will be key to meet these.

In addition to supporting the needs of the service and the patients, this service evaluation also identified the need to support and promote the professional identity of Therapeutic Radiographers and specialist roles.

Prostate cancer patient numbers continue to grow and in-line with this, services must develop. As mentioned in the discussion two further USTRs were employed to support and grow this model towards the end of 2018. The model presented could support the redesign of patient information giving and the introduction of Specialist Radiographers across other Trusts and treatment sites.

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# Appendix A

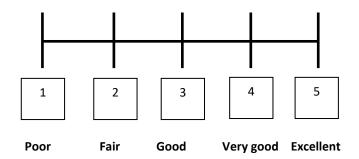
# The Royal Marsden NHS Foundation Trust Patient experience survey of information and support during prostate radiotherapy Taking part in this survey is voluntary. Your answers will be treated in confidence

1. In	1. In which hospital were you treated?				
1 🗆	Sutton, Royal Marsden Hospital				
2 🗆	Chelsea, Royal Marsden Hospital				
2. Dio	2. Did you attend a Prostate Radiotherapy Seminar?				
1 🗆	Yes				
2 🗆	No				
3. Ho	3. How prepared did you feel when starting radiotherapy?				
1 🗆	Completely prepared				
2 🗆	Somewhat prepared				
3 □	Somewhat unprepared				
4 🗆	Completely unprepared				
5 🗆	Don't know / can't remember				
4. Ho	w satisfied were you with the verbal information, which you received prior to radiotherapy?				
1 🗆	Completely satisfied				
2 🗆	Somewhat satisfied				
3 🗆	Somewhat unsatisfied				
4 🗆	Completely unsatisfied				
5 🗆	Don't know / can't remember				
5. Did you feel you received enough written information prior to radiotherapy?					
1 🗆	Just right				
2 🗆	Too much				
3 🗆	Too little				
4 🗆	Don't know / can't remember				
6. Would you have found any of these additional resources helpful when preparing for radiotherapy?					
1 🗆	A virtual demonstration of the radiotherapy treatment room and treatment delivery				
2 🗆	A video explaining prostate radiotherapy to watch at home				

3 🗆	A website containing radiotherapy resources		
4 🗆	An online prostate cancer support group		
5 🗆	A face-to-face prostate cancer patient support group		
6 □	Other, please specify below		
7. Dic	I you have a regular review appointment during your radiotherapy treatment?		
1 🗆	Yes		
2 🗆	No (if no skip to question 13)		
3 🗆	Don't know / can't remember		
8. On	average how soon after your review appointment time were you seen?		
1 🗆	On time or within 20 minutes of my appointment		
2 🗆	Between 20 minutes and 1 hour of my appointment time		
3 🗆	More than 1 hour after my appointment time		
4 🗆	Don't know / can't remember		
9. Which healthcare professionals reviewed you most frequently in this clinic?			
1 🗆	Doctor		
2 🗆	Specialist Nurse		
3 🗆	Specialist Radiographer		
4 🗆	Don't know / can't remember		
10. W	ere you satisfied with the level of knowledge of the individual you saw?		
1 🗆	Completely satisfied		
2 🗆	Somewhat satisfied		
3 🗆	Somewhat unsatisfied		
4 🗆	Completely unsatisfied		
5 🗖	Don't know / can't remember		
11. W	Vere you satisfied that you had enough time to discuss all issues in this review appointment?		
1 🗆	Completely satisfied		
2 🗆	Somewhat satisfied		
3 🗆	Somewhat unsatisfied		
4 🗆	Completely unsatisfied		

5 🗆	Don't know / can't remember			
12. Were you involved as much as you wanted to be in decisions made in this clinic?				
1 🗆	Yes, definitely			
2 🗆	Yes, to some extent			
3 🗆	No, but I would like to have been			
4 🗆	No, I did not wish to be			
5 🗆	Don't know / can't remember			
13. 0	n finishing your radiotherapy were you given a follow up appointment?			
1 🗆	Yes			
2 🗆	No			
3 🗆	Don't know / can't remember			
14. On finishing radiotherapy did you understand how you would be followed up?				
1 🗆	Completely understood			
2 🗆	Somewhat understood			
3 🗆	Somewhat confused			
4 🗆	Completely confused			
5 🗆	Don't know / can't remember			
15. O	n finishing your radiotherapy was it clear how long to continue taking hormones for?			
1 🗆	Yes			
2 🗆	No			
3 🗆	Not applicable			
16. On finishing Radiotherapy did you know who to contact if you had any questions / concerns?				
1 🗆	Yes			
2 🗆	No			
3 🗆	Don't know / can't remember			

17. How would you rate your overall experience? (Please circle)



18. Do you have any other comments or suggestions that you would like to share?

Many thanks for taking the time to complete this questionnaire. We appreciate your help. Please return this questionnaire in the pre-paid envelope provided.