Job Description

<table>
<thead>
<tr>
<th>Job Group (Delete as applicable):</th>
<th>Healthcare Scientists</th>
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</thead>
<tbody>
<tr>
<td>Job Title:</td>
<td>Clinical Technologist/Dosimetrist (Radiotherapy Physics)</td>
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<tr>
<td></td>
<td>Healthcare Scientist Practitioner</td>
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<tr>
<td>Existing Grade:</td>
<td>Band 5</td>
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<tr>
<td>Care Group:</td>
<td>Clinical Support Services</td>
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<tr>
<td>Service Line:</td>
<td>Healthcare Science &amp; Technology Summary</td>
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<tr>
<td>Department:</td>
<td>Radiotherapy Physics</td>
</tr>
<tr>
<td>Location:</td>
<td>Derriford Hospital</td>
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<tr>
<td>Appraiser:</td>
<td>Principal Clinical Dosimetrist</td>
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<tr>
<td>Accountable to:</td>
<td>Head of Treatment Planning (Lead Dosimetrist)</td>
</tr>
<tr>
<td>Position Number:</td>
<td>4039629</td>
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<tr>
<td>Date:</td>
<td>August 2019</td>
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**JOB PURPOSE**

The post holder works as member of the Radiotherapy Physics Section of Medical Physics, a team of Dosimetrists (Clinical Technologists) and Clinical Scientists responsible for providing a clinical scientific and technical service to the Plymouth Oncology Centre.

1. The post holder will work within all areas in Radiotherapy Physics, including:
   1.1 Radiotherapy Treatment Planning and Mould Room Services
   1.2 Radiation Dosimetry
   1.3 Quality Assurance and Commissioning
   1.4 Brachytherapy
   1.5 Stereotactic Radiosurgery
   1.6 Radiation Protection

2. The post holder will report professionally to Head of Treatment Planning (Lead Dosimetrist) and managerially to Principal Dosimetrist (Radiotherapy Physics).

3. The post holder will undertake specialist scientific and technical duties in each clinical work area within agreed criteria; under the management of the lead Healthcare Scientist for the particular work area they are assigned.

4. A record of achieved local competencies in each area of radiotherapy physics will be maintained.

5. The post holder requires the ability to prioritise demands, accommodate unplanned events and work without direct supervision.

6. The post holder performs treatment preparation sessions directly with patients attending the Plymouth Oncology centre for cancer sessions and provides support for their relatives.

7. The post holder will liaise closely on a daily basis with a wide range of staff in Radiotherapy and Medical Physics, including clinical oncologists, medical and nursing staff, scientific staff, technologists and radiographers.
Key Dimensions:

1. The Radiotherapy Physics Section consists of 24 Healthcare scientists, 3 Clerical Officer, providing support to other directorates at Derriford Hospital.

2. The Oncology & Blood Directorate serves a population of approximately half a million, and treats approximately 1200 patients per annum by external beam using three Varian accelerators. A further 60 gynecological cancer treatment using a Varian HDR unit.

3. Radiotherapy Treatment Planning computer system is used to calculate the optimum treatment plan for ~900 patients p.a. utilizing precisely measured data from the radiotherapy treatment machines, combined with images from CT and MR scanners.

4. The Mould Room produces patient-customized radiotherapy treatment devices.

5. The Oncology & Blood Directorate provides Stereotactic Radio-surgery to the peninsula population of approximately four million, and has the current capacity to treat 80 patient single fraction patients per annum using Novalis and the Brainlab planning system.

6. A further 25 patients per annum from the peninsula are treated with fractionated Stereotactic Radiotherapy.

Organisational Chart
<table>
<thead>
<tr>
<th>PRIMARY DUTIES &amp; AREAS OF RESPONSIBILITY</th>
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<tbody>
<tr>
<td><strong>Clinical</strong></td>
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<tr>
<td><strong>Treatment planning</strong></td>
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<tr>
<td>1. Responsible for the electronic import of radiological images (CT scans) to afford accurate interpretation for radiotherapy treatment planning purposes.</td>
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<tr>
<td>2. Independently identifies and delineates critical patient organs and avoidance structures at risk from acute or late radiation damage/ necrosis within patient image data sets.</td>
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<tr>
<td>3. Work in collaboration with the Consultant Clinical Oncologist to define the extents of the tumour volume and intended irradiation area. Provide guidance to junior clinical staff (Specialist Registrars) on the tumour definition process.</td>
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<tr>
<td>4. Responsible for independent validation and confirmation of critical data relating to tumour position/site against patient data sources.</td>
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<tr>
<td>5. Produce routine and complex radiation dose plans and carry out associated complex calculations to quantify the radiation dose received by the patient, in accordance with clinical prescription and agreed procedures, using computerised planning systems as appropriate.</td>
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<tr>
<td>6. Analyse proposed treatments and make highly analytical judgements regarding treatment parameters and patient radiation dose effects. Using visual objectivity and computerised dose volume histograms, to ensure adherence of dose uniformity and dose critical constraints.</td>
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<tr>
<td>7. Advise and discuss with clinical staff the various radiation plan approaches, resulting in an optimum patient specific treatment plan.</td>
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<tr>
<td>8. Calculate, and prepare templates for critical irradiation beam shielding blocks as specified by the referring clinician.</td>
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<tr>
<td>9. Evaluate requirements for and calculate complex beam modelling parameters affording field alignment for patient treatment plan application.</td>
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<td>10. Transfer patient critical information to the department treatment management system, presenting the information in a clear accurate format for treatment application.</td>
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<tr>
<td>11. Create digital anatomical images to be used for the validation and verification checks required to ensure correlation of the plan parameters with the patient treatment set up.</td>
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<tr>
<td>12. Responsible for performing the final independent check on treatment technique, treatment plan data, dose calculations and templates. Prior to issuing for the commencement of the patient’s radiation treatment</td>
</tr>
<tr>
<td>13. Provide Therapy Radiographers with immediate unscheduled advice, relating to patient plan parameters. Confirming set-up or radiation dose tolerances and advising on appropriateness to continue or cease current treatment delivery session.</td>
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<tr>
<td>14. Replan patient treatments where required, following changes to the treatment regime or patient shape. Use judgment to subjectively analyse and determine the most appropriate actions required. Carry out manual dose calculations for review.</td>
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<tr>
<td><strong>Quality Assurance</strong></td>
</tr>
<tr>
<td>1. Assists when required the Radiotherapy Clinical Scientists with Quality Assurance tasks affording confirmation of the safe and accurate function of the highly complex radiotherapy treatment units and the continuing integrity of radiation beam data relating to radiation doses.</td>
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<tr>
<td>2. Responsible for the personal safe use of highly complex radiotherapy treatment units.</td>
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<tr>
<td><strong>Mould room</strong></td>
</tr>
<tr>
<td>1. Support, advise, and provide information to patients and relatives relating to pre-treatment sessions. Clearly communicate with patients during mould room activities, at times overcoming understanding difficulties with patients presenting with brain tumours.</td>
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<tr>
<td>2. Provide specialist technical advice to medical staff on patient positioning and suitable fixation devices to accurately immobilise patients during radiotherapy treatment.</td>
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<tr>
<td>3. Manufacture bespoke patient beam immobilisation shells for specialist treatments.</td>
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<tr>
<td>4. Coordinate the patient imaging session for mould room patients; provide guidance to the therapeutic</td>
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and/or diagnostic radiographers affording acquisition of the appropriate X-ray images required for the treatment planning process.

5. Make other individual patient specific treatment aids to high degree of accuracy such as wax blocks, lead or low melting point alloy blocks, and electron cutouts, using a range of manufacturing techniques.

6. Arrange pre-treatment and treatment schedules for patients to ensure that they receive treatment when planned and in accordance with pre determined clinical protocols, liaising with medical and radiographic staff.

**Brachytherapy**

1. Undertake training to support routine quality assurance checks associated with the clinical Brachytherapy system.

2. Undertake training to support the brachytherapy services.

**Managerial**

1. Prioritise and manage own work. Provide support and advice within the RT Physics team on Radiotherapy applications.

2. Keep careful records of all work performed and other appropriate records as required for statistical purposes, in all work areas within radiotherapy physics section.

3. Monitor stocks and order supplies as required enabling duties to be performed.

4. Assist in producing revised or new protocols for the department’s quality system, when required.

**Teaching, training and research**

1. Provide theoretical and practical work based instruction to trainee Healthcare Scientists (Clinical Technologist and Clinical Scientists), and Therapy Radiographers and on all aspects of Radiotherapy Physics.

2. Demonstrate techniques to pre-registration Healthcare Scientists as required.

3. Train other qualified staff in the technical aspects of radiotherapy physics duties, as required.

4. Assist in producing and developing career literature, present at public career events to improve professional awareness.

5. Assist with the development of new clinical techniques in conjunction with other staff groups.

6. Participate in departmental and national research trials and audits.

**Professional**

1. The post-holder is professionally responsible to the Head of Treatment Planning Lead Dosimetrist within Radiotherapy Physics.

2. Participate in the Institute of Physics & Engineering (IPEM) Continuing Professional Development scheme. To maintain skills and afford development of practical and theoretical skills and knowledge.

3. Present at department, local and regional meetings/conferences on technical topics, as required.

4. Attend suitable seminars and courses as part of training and personal development and to further the work of the Department.

5. Ensure all activities are carried out and comply with the quality framework (BS EN ISO 9001-2015) and conform to Statutory Regulations, approved Codes of Practice and Local Safety Rules

**Miscellaneous**

1. Work flexibly to meet service requirements this will require some tasks to be performed outside the directorate’s core working hours, e.g. Brachytherapy, Equipment Quality Control and may occasionally include paid overtime. Discharge such other duties as may be required by the Lead Dosimetrist, and/or the Head of Radiotherapy Physics.

2. The Department provide a treatment planning service between 8am and 6pm. Current staff in planning typically work 75 hours over a nine day fortnight. The department provides quality assurance and calibration on the linear accelerators one day a week either 5:45 am – 8:30 am or 5pm – 7:30pm.
3 The post holder will behave courteously and professionally at all times and seek to ensure that the highest level of service is provided by Radiotherapy Physics.

The working environment requires:

4 Frequent exposure to controlled ionizing and non-ionizing radiations, with occasional exposure to uncontrolled radiations.

5 Occasional exposure to conditions involving body odours/fluids, necrotic tissue and open wounds when attending to terminally ill patients.

COMMUNICATIONS & WORKING RELATIONSHIPS

- Work collaboratively and ensure effective communication with all members within a multi-disciplinary team including Consultant Oncologists, Specialist Nurses, Clinical Scientists and Radiographers etc.
- Ensure effective and open communication with other colleagues including Directorate Manager, Administration colleague, external agencies as required
- Ensure effective and open communication with Patients, relatives and carers.

All Job Holders are required to...

- Work to the Trust values - Put patients first, Take ownership, Respect others, Be positive, Listen, learn and improve.
- Adhere to Trust policies and procedures, e.g. Health and Safety at Work, Equal Opportunities etc.
- Maintain personal and professional development to meet the changing demands of the job, participate in appropriate training activities and encourage and support staff development and training.
- Attend statutory, essential and mandatory training.
- Respect the confidentiality of all matters relating to their employment and other members of staff. All members of staff are required to comply with the requirements of the Data Protection Act 1998.
- Comply with the Corporate Governance structure in keeping with the principles and standards set out by the Trust.
- Comply with the codes of professional conduct set out by the professional body of which registration is required for the post.
- Ensure they are familiar with the Risk Management Framework, follow policies, procedures and safe systems of work, make known any hazards or risks that they identify and take all necessary actions to reduce risk.
- Ensure the welfare and safety of children within their care. This includes staff who come into contact with children and families in the course of their work as well as those staff who have a specific role with children and families.
- Ensure they attend Child Protection training at the appropriate level within the specified time frame.
- Staff must comply with Safeguarding Policies and Procedures in order to promote safeguarding and prevent abuse to vulnerable people using Trust services.
- Maintain the prevention and control of infection and fully comply with all current Trust Infection Control policies and procedures.
- Take responsibility for any records that they create or use in the course of their duties, in line with the Public Records Act and be aware that any records created by an employee of the NHS are public.
records and may be subject to both legal and professional obligations.

All Managers are responsible for...

- Assessing risks and implementing the necessary actions to minimise these risks within their sphere of responsibility. They must also enable staff to attend the relevant statutory and essential training.
- Managing attendance in accordance with the Trusts Attendance Management Policy.

All Heads of Departments are responsible for...

- Ensuring all necessary risk assessments are carried out within their division, Service Line or department in liaison with relevant sources of specialist support and expertise within the Trust. They must also ensure that the risk management process is completed appropriately.

Note

This job description is neither definitive nor exhaustive and is not intended to be totally comprehensive. It may be reviewed in the light of changing circumstances following consultation with the post holder. This job description is to be read in conjunction with all current Plymouth Hospitals NHS Trust policies, procedures & guidelines.
## PERSON SPECIFICATION

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<thead>
<tr>
<th>ATTRIBUTES</th>
<th>ESSENTIAL</th>
<th>DESIRABLE</th>
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| **KNOWLEDGE & EXPERIENCE** | • Current Specialist knowledge and experience in the areas of Radiotherapy physics  
• Sound knowledge and background in the physics of radiotherapy and radiation safety.  
• Working knowledge of relevant legislation, national standards, professional and other guidelines (e.g., IRR, IR(ME)R, Health & Safety, COSHH)  
• Well-developed IT skills, including Office suite and specialist software systems; able to manage, manipulate and report information | Experience with the Varian Eclipse Treatment Planning System  
Advanced level of understanding of radiation risk (to patients and staff)  
Excellent patient handling techniques (including the movement / positioning of disabled patients)  
In depth understanding of anatomy, and the physiology of malignant disease  
Working knowledge and understanding of infection control.  
Able to work safely within a workshop environment, frequent exposure to chemical fumes and plaster dust. Ability to operate workshop equipment safely. |
| **QUALIFICATIONS** | • Demonstrable experience in Radiotherapy Physics  
• Proven knowledge in all aspects of radiotherapy Physics applications  
Vocational BSC (Hons) Degree in Clinical Technology, or hold a recognised Qualification with clinical experience equivalent Thereto. | Approved Clinical Technologist on IPEM registration (RCT).  
HCPC State Registration (or eligible to register)  
Eligible for membership of the Institute of Physics and Engineering in Medicine (IPEM) |
| **APTITUDE & ABILITIES** | • Good communication skills and ability to communicate effectively  
• Able to prioritise, manage and plan work for self.  
• Able to accept a high level of autonomy and under own initiative  
• Ability to work under pressure, at times in unpredictable work patterns and adjust to interruptions during periods of concentrations to meet reasonable deadlines.  
• Application of sophisticated test/measurement equipment to afford high precision measurements  
• Able to concentrate for long periods | Manual dexterity and ability to move and position less able patients  
Able to make judgements on test results and report interpretation to clinicians.  
Able to solve complex problems using analytical skills and clinical judgement.  
Aware of the need to maintain patient confidentiality. |
| **DISPOSITION / ATTITUDE / MOTIVATION** | • Patient Focused  
• Able to deal with continuous change and technical updates.  
• Ability to deal with occasional distressing circumstances  
• Occasionally requirements lift and move equipment (moderate physical effort). | Able to deal frequently with emotionally demanding patients |
| **OTHER FACTORS** | • Team worker | |