

JOB DESCRIPTION

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| **JOB DETAILS**  |
| **Job Title**  | Clinical Scientist (Radiotherapy Physicist) |
| **Reports to**  | LeadTreatment Planning/Dosimetry QC /Brachytherapy  |
| **Band**  | 7 |
| **Department/Directorate**  | Medical Physics/Specialist Services |

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| **JOB PURPOSE**  |
| The main role of this post is to participate in all aspects of the work of the Radiotherapy Physics Group, which provides highly specialist clinical technical services. This includes:* Undergoing Advanced Training in all areas of Radiotherapy Physics (External Beam treatment planning, Dosimetry and Quality Control, Brachytherapy and Radionuclide therapy)
* Handling complex dosimetry equipment to perform routine calibration and monitoring of highly complex radiation-producing equipment.
* Providing specialised advice and guidance, where necessary, to the Radiotherapy department in matters relating to treatment plans, dosimetry and radioactive isotope treatments
* Presenting clinical data to medical staff and upholding legal requirements.
* Being responsible on a day-to-day basis to the relevant Principal Physicist in charge of the areas in which work is currently being performed.
* Having a keen sense of responsibility with a high degree of accuracy and taking personal initiative.
* Contributing to research and development projects where assigned, including making a major contribution to the commissioning of new radiotherapy equipment, software and techniques.
* Taking part in linac machine run-ups on a rotational basis.
* Performing linac QC and IMRT/VMAT verification measurements in evenings. Being on call for emergency treatments at weekends on a rotational basis.

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| **KEY RESULT AREAS/PRINCIPAL DUTIES AND RESPONSIBILITIES** |
| **Clinical/Scientific*** Communicate with medical staff, providing advice regarding the clinical effects of complex treatment plan options referring to key statistical indicators for both external beam and brachytherapy planning.
* Provide checks on treatment plans by means of manual calculations, spreadsheets, software-based methods and physical measurements.
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| * Adhere to the good practice that treatment plans are independently checked by someone not directly involved in their production.
* Provide scientific support for all aspects of external beam treatments, making judgements involving complex facts & situations which require the analysis and interpretation of a range of options.
* Produce treatment plans including those using advanced beam modulation technology for external beam radiotherapy using computerised systems to design highly individualised dose distributions.
* Apply dose volume constraints to organs at risk, minimising such doses where practicable so that radiotherapy can be delivered as safely as possible.
* Design treatment plans based on complex requirements to achieve the required dose distribution over the treatment volume using clinical judgement to analyse and select from of a range of possible solutions.
* Manipulate and combine three dimensional CT, MRI, PET and radiation dose images using IT equipment and software so that treatment volumes, organs at risk and radiation distributions can be visualised and matched.
* Perform brachytherapy planning, treatment calculations, checks and treatment authorisation for intraluminal and other single applicator brachytherapy treatments. Provide clinical advice that directly affects immediate patient management under time pressure.
* Attend theatre procedures involving the insertion of brachytherapy needles and catheters to advise on their placement.
* Produce routine and complex treatment planning for brachytherapy using computerised systems to design individualised dose distributions.
* Provide support to the brachytherapy QC and HASS Iridium–192 calibration program.
* Undertake routine Quality Control work under the direction of the QC Physicist in accordance with the appropriate UK codes of practice.
* Undertake dosimetry measurements to a high degree of accuracy using highly complex patient-critical equipment – responsible for safe use of this equipment.
* Prepare radioactive substances for administration to patients, maintaining eye/hand physical coordination skills in order that accurate doses may be given and radioactive contamination is contained safely.
* Maintain sterile conditions within biological containment systems when preparing injectable radionuclides in line with Infection Control guidance.
* Undertake routine work in all areas of Radiotherapy Physics when required. Plan and organise straightforward tasks/activity programmes to meet service requirements.
* Participate in the quality control process for the treatment planning system
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| **KEY WORKING RELATIONSHIPS**  |
| Areas of Responsibility: Radiotherapy physicsNo. of Staff reporting to this role: 0 The post holder is required to deal effectively with staff of all levels throughout the Trust as and when they encounter on a day to day basis In addition the post holder will deal with the wider healthcare community, external organisations and the public. This will include verbal, written and electronic media. Of particular importance are working relationships with:

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| **Internal to the Trust**  | **External to the Trust**  |
| * Physicists
* Engineers
* Dosimetrists
* Mould Room Technologists
* Radiographers
* Clinicians
* Administrative staff
* IT support
 | * Equipment vendors
* Equipment support
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| **ORGANISATIONAL CHART**  |
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| **FREEDOM TO ACT**  |
| * Prioritise and manage own work to meet treatment demands
* Supervise the work of trainees, radiographers and medical-technical staff as required
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| **COMMUNICATION/RELATIONSHIP SKILLS**  |
| * Communicate with patients and their carers regarding highly complex information recognising and dealing with emotional stress and other barriers to receiving information.
* Interpret specialist radiation protection advice to patients undergoing radionuclide therapy and their carers so that unintended exposure to radiation may be minimised and prevented in accordance with IRR17.
* Perform and advise on in vivo dosimetry measurements on patients. Provide advice to medical staff regarding the changing of clinical parameters so that doses to organs at risk may be minimised while tumour doses are maintained.
* Advise medical and radiographic staff concerning the physics aspects of radiotherapy so the patient receives the optimum treatment.
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| **ANALYTICAL/JUDGEMENTAL SKILLS** |
| * Perform Quality Control checks on complex modulated beam treatments on a per patient basis when required, analysing the results to ensure dose distributions are within tolerance.
* Inform the principal physicist and/or the lead physicist of quality control or routine results that require immediate attention.
* Undertake radiation protection measurements, including contamination monitoring, so risks to staff and members of the public are minimised.
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| **PLANNING/ORGANISATIONAL SKILLS** |
| * Participate in the working of the Medical Physics Department ISO 9001:2015 Quality System, suggesting Quality Improvements, undertaking audits and contributing to developments in the documentation system.
* Under the supervision of the lead physicists, maintain and develop departmental documentation (Instructions, Procedures, Clinical protocols etc.) recording all relevant information.
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| **PATIENT/CLIENT CARE**  |
| Incidental contact with patients is required, courtesy and respect for patient confidentially is required at all times.  |
| **POLICY/SERVICE DEVELOPMENT**  |
| Participate in the development and implementation of clinical dosimetry protocols and procedures as required by the lead physicists and/or head of radiotherapy physics. |
| **FINANCIAL/PHYSICAL RESOURCES**  |
| No financial responsibility.  |
| **HUMAN RESOURCES**  |
| Participate in the training and supervision of medical physics trainees, technologists and undergraduate students as required by the head of radiotherapy physics. |
| **INFORMATION RESOURCES**  |
| Maintain, enhance and process clinically relevant information associated with:* Acceptance and commissioning of Medical devices
* Patient related doses, quality control and clinical outcomes
* Clinical protocols
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| **RESEARCH AND DEVELOPMENT**  |
| * Commission new equipment, techniques and software.
* Propose changes to working practices for own work area to improve and develop systems in terms of efficiency and quality, after liaising closely with colleagues implements developments in own area.
* Provide support for patients entering clinical trials providing relevant clinical data within accepted protocols as part of formal research programmes.
* Participate in clinically relevant research & development, presenting the results in the literature and at meetings and at conferences to large groups of staff and members of the public, so that the innovations and improvements may become embedded in clinical practice.
* Develop and design techniques, software and equipment to enhance the quality and efficiency of radiotherapy physics.
* Write software where necessary modifying and customising existing scripts, programmes and macros to model clinical and dosimetric situations.
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| **PHYSICAL SKILLS** |
| * Ability to concentrate for long (hours) periods of time
* Good eye-hand coordination
* Ability to stand up for hours at time while performing computer-aided measurements
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| **PHYSICAL EFFORT** |
| * Highly-developed physical skills are required to carry out scientific measurements where a high degree of precision and accuracy is essential.
* Advanced IT skills.
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| **MENTAL EFFORT** |
| Ability to concentrate for long (hours) periods of time on a frequent basis, for example, checking radiotherapy treatment plans where mistakes could lead to incorrect treatment being administered thus affecting the outcome of the treatment. |
| **EMOTIONAL EFFORT** |
| Emotionally robust enough to work daily on aspects of the treatment of cancer patients, who may be children or may be terminally ill (indirect exposure to distressing/emotional circumstances). |
| **WORKING CONDITIONS** |
| Occasional contact with patients, blood/body fluids. VDU use (>1 hour daily), heavy manual handling (>10kg), working in isolation. |
| **OTHER RESPONSIBILITIES**  |
| Take part in regular performance appraisal.Undertake any training required in order to maintain competency including mandatory training, e.g. Manual HandlingContribute to and work within a safe working environment You are expected to comply with Trust Infection Control Policies and conduct him/herself at all times in such a manner as to minimise the risk of healthcare associated infectionAs an employee of the Trust, it is a contractual duty that you abide by any relevant code of professional conduct and/or practice applicable to you. A breach of this requirement may result in action being taken against you (in accordance with the Trust’s disciplinary policy) up to and including dismissal.You must also take responsibility for your workplace health and wellbeing:* When required, gain support from Occupational Health, Human Resources or other sources.
* Familiarise yourself with the health and wellbeing support available from policies and/or Occupational Health.
* Follow the Trust’s health and wellbeing vision of healthy body, healthy mind, healthy you.
* Undertake a Display Screen Equipment assessment (DSE) if appropriate to role.
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| **GENERAL**  |
| This is a description of the job as it is now. We periodically examine employees' job descriptions and update them to ensure that they reflect the job as it is then being performed, or to incorporate any changes being proposed. This procedure is conducted by the manager in consultation with the jobholder. You will, therefore, be expected to participate fully in such discussions. We aim to reach agreement on reasonable changes, but if agreement is not possible, we reserve the right to insist on changes to your job description after consultation with you.Everyone within the Trust has a responsibility for, and is committed to, safeguarding and promoting the welfare of vulnerable adults, children and young people and for ensuring that they are protected from harm, ensuring that the Trusts Child Protection and Safeguarding Adult policies and procedures are promoted and adhered to by all members of staff. At the Royal Devon, we are committed to reducing our carbon emissions and minimising the impact of healthcare on the environment, as outlined in our Green Plan available on our website. We actively promote sustainable practices and encourage colleagues to explore and implement greener ways of working within their roles. |

PERSON SPECIFICATION

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| **Job Title** | Radiotherapy Physicist |

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| **Requirements** | **Essential** | **Desirable** |
| **QUALIFICATION/ SPECIAL TRAINING**BSc in a Physical ScienceMSc or higher degree in Medical PhysicsIPEM full MembershipState Registration as a Clinical Scientist | **E****E****E****E** |  |
| **KNOWLEDGE/SKILLS**Advanced IT skills including Excel, Word and PowerPoint Ability to communicate effectively with different staff groups – including clinical scientists, clinical technologists, radiographers, medical staff and clerical staffPresentation SkillsKnowledge of brachytherapy, QC and dosimetry in Radiotherapy Physics, radiotherapy treatment planningIMRT & IGRT techniquesISO 9001Scientific computing and coding | **E****E****E****E****E** | **D****D** |
| **EXPERIENCE** Experience of working within a radiotherapy physics environment during training | **E** |  |
| **PERSONAL ATTRIBUTES** Ability to prioritise work and to meet deadlinesNeeds to be able to work with concentration and accuracy on complex technical issues where the work pattern is unpredictable, handling interruptions as they arise.Interpersonal skills for collaboration with colleaguesAbility to make accurate measurements using sophisticated fine testing equipment, where accuracy is important but there is no requirement for speed.While operating QA and test equipment (6-15kg / delicate & cumbersome), able to occasionally exert moderate physical effort for several short periods during a shiftEmotionally robust enough to work daily on aspects of the treatment of cancer patients, who may be children or may be terminally ill (indirect exposure to distressing/emotional circumstances)Able to deal with occasional exposure to highly unpleasant conditions.Able to work as a team member.  | **E****E****E****E****E****E****E****E** |  |
| **OTHER REQUIREMENTS** The post holder must demonstrate a positive commitment to uphold diversity and equality policies approved by the Trust. Ability to travel to other locations as required.  | **E****E** |  |

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|  | **FREQUENCY****(Rare/ Occasional/ Moderate/ Frequent)** |
| **WORKING CONDITIONS/HAZARDS** | **R** | **O** | **M** | **F** |
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| **Hazards/ Risks requiring Immunisation Screening** |  |  |  |  |
| Laboratory specimens | N |  |  |  |  |
| Contact with patients | Y |  | **O** |  |  |
| Exposure Prone Procedures | N |  |  |  |  |
| Blood/body fluids | Y | **R** |  |  |  |
| Laboratory specimens | N |  |  |  |  |
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| **Hazard/Risks requiring Respiratory Health Surveillance** |  |  |  |  |  |
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| Solvents (e.g. toluene, xylene, white spirit, acetone, formaldehyde and ethyl acetate) | N |  |  |  |  |
| Respiratory sensitisers (e.g isocyanates) | N |  |  |  |  |
| Chlorine based cleaning solutions (e.g. Chlorclean, Actichlor, Tristel) | N |  |  |  |  |
| Animals | N |  |  |  |  |
| Cytotoxic drugs | N |  |  |  |  |
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| **Risks requiring Other Health Surveillance** |  |  |  |  |
| Radiation (>6mSv) | N |  |  |  |  |
| Laser (Class 3R, 3B, 4) | N |  |  |  |  |
| Dusty environment (>4mg/m3) | N |  |  |  |  |
| Noise (over 80dBA) | N |  |  |  |  |
| Hand held vibration tools (=>2.5 m/s2) | N |  |  |  |  |
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| **Other General Hazards/ Risks** |  |  |  |  |
| VDU use ( > 1 hour daily) | Y |  |  | **M** |  |
| Heavy manual handling (>10kg) | Y | **R** |  |  |  |
| Driving | N |  |  |  |  |
| Food handling | N |  |  |  |  |
| Night working | N |  |  |  |  |
| Electrical work | N |  |  |  |  |
| Physical Effort  | Y | **R** |  |  |  |
| Mental Effort  | Y |  |  | **M** |  |
| Emotional Effort  | Y |  | **O** |  |  |
| Working in isolation | Y | **R** |  |  |  |
| Challenging behaviour | Y | **R** |  |  |  |