

Job Description

Job title:	Radiotherapy Engineer
Division:	Cancer
Board/corporate function:	Surgery and Cancer
Salary band:	7
Responsible to:	Group Lead - Radiotherapy Engineering Services and Quality Manager for Radiotherapy Physics Services
Accountable to:	Head of Radiotherapy Physics Services
Hours per week:	37.5
Location:	UCLH Radiotherapy Department, 235 Euston Road, NW1 2BU

University College London Hospitals NHS Foundation Trust

University College London Hospitals NHS Foundation Trust (UCLH) is one of the most complex NHS trusts in the UK, serving a large and diverse population. In July 2004, we were one of the first NHS trusts to achieve Foundation Trust status.

We provide academically-led acute and specialist services, to people from the local area, from throughout the United Kingdom and overseas.

Our vision is to deliver top-quality patient care, excellent education and world-class research. We provide first-class acute and specialist services across eight sites:

- University College Hospital (incorporating the Elizabeth Garrett Anderson Wing)
- National Hospital for Neurology and Neurosurgery
- Eastman Dental Hospital
- Royal National Throat, Nose and Ear Hospital
- Heart Hospital
- Royal London Hospital for Integrated Medicine
- University College Hospital Macmillan Cancer Centre
- The Hospital for Tropical Diseases

We are dedicated to the diagnosis and treatment of many complex illnesses. UCLH specialises in women's health and the treatment of cancer, cardiac, infection, neurological, gastrointestinal and oral disease. It has world class support services including critical care, imaging, nuclear medicine and pathology.

Radiotherapy Department

The Surgery and Cancer Board comprises of Surgery, Cancer services and Imaging, led by the Medical Director.

The Radiotherapy Physics Department consists of Physicists, Planning Radiographers Physics practitioners (clinical technologists) and Radiotherapy Engineers. At any given time, there may also be several additional staff undertaking training in the Department, including STP and PTP Physics trainees, Radiographers rotating through Treatment Planning, Student Radiographers, and Oncology Registrars and Medical Physics MSc students.

The Radiotherapy Physics Section is part of a multi-disciplinary team in the Department of Clinical Oncology, which sees about 2000 new patients per year. The Radiotherapy Department is equipped with four Varian TrueBeam linear accelerators. The department equipment also includes one orthovoltage unit and an Elekta High Dose Rate Brachytherapy unit. Planning equipment includes a CT simulator with full 4D imaging capabilities for Respiratory Gated studies. The Department offers a variety of specialised treatment services and is continually developing advanced treatment techniques. Treatments offered include: IMRT; Volumetric Arc Therapy; IGRT; CT-based TBI; Ultrasound-guided and CT-planned HDR prostate

Radiotherapy Engineering

Radiotherapy Engineering is part of the Radiotherapy Physics Services Department. There are two engineering teams. One team has responsibility for engineering activities in the Radiotherapy Department and the other team has responsibility for engineering activities in the Proton Beam Therapy (PBT) Radiotherapy Department.

Job Purpose

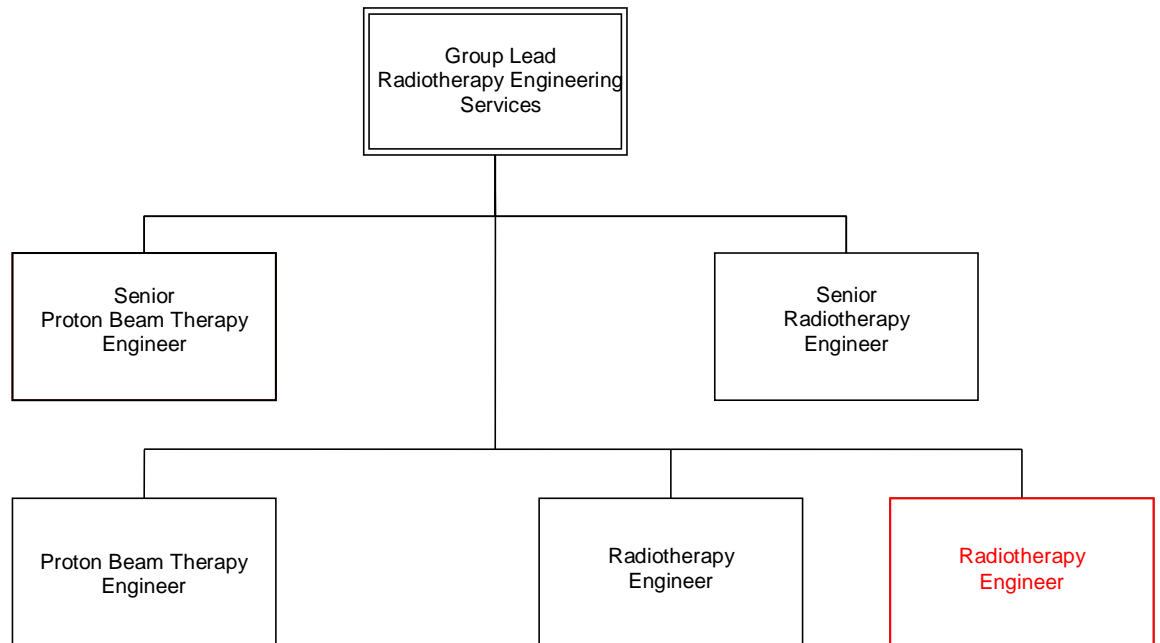
- The role is primarily concerned with ensuring scheduled preventative maintenance and fault repairs on high-capital value and highly complex medical equipment used for Clinical Radiotherapy treatments are undertaken efficiently to maximise clinical uptime.
- The role of the post holder is to provide safe and efficient equipment support service to the Radiotherapy Department ensuring minimal clinical downtime. The clinical equipment covered incorporates electrical, electronic, mechanical, computer control software / networking, high vacuum systems and ionising radiation.
- The post holder will also be responsible for undertaking clinically-based Research and Development projects within Radiotherapy.
- Familiarity with the broader range of radiation and medical electronic equipment is also desirable. The post holder must be highly experienced in fault finding and fault correction, able to service computer controlled equipment, and must have a meticulous attitude to detail.
- The post holder requires familiarity with relevant standards. The post holder must be able to work safely under pressure in clinical areas. There is likely to be some patient contact.
- Close liaison with other healthcare professionals is involved, in particular Radiographers, Clinical Oncologists and Medical Physicists, as well as manufacturer service representatives.

Key Working Relationships

The post holder will be accountable to the Head of Radiotherapy Physics. Their line manager will be the Head of Radiotherapy Engineering.

The post holder will have working relationships with:-

- Group Lead for Radiotherapy Physics
- Other members of the Radiotherapy Physics Group
- Head of Radiotherapy Services
- Operational Lead for Radiotherapy Services
- Other members for the Radiotherapy Department
- Members of the Medical Physics Department
- Radiotherapy Quality Manager
- Radiotherapy Physics Quality Manager



Key Results Areas

- The services provided by the Radiotherapy Engineering group to Radiotherapy will be maintained at a high professional level, ensuring a high level of efficiency and safety of the Radiotherapy equipment.
- The unscheduled down-time of all the highly complex Radiotherapy equipment will be kept to a minimum.
- Developments in equipment technology and treatment techniques will be implemented in a safe and timely manner within a multi-disciplinary approach.
- All activities of the post holder within the Radiotherapy Department will be compliant with relevant national Radiation Protection legislation.

Main Duties and Responsibilities

Scientific and Technical

1. Provide a comprehensive specialised maintenance and repair service to the Radiotherapy Department, with the aim of maximising the availability of the Radiotherapy Equipment for clinical use.
2. The post holder will be required to assist in the solution of extremely complex and sometimes unique problems on multifaceted medical devices, often under clinical pressure, whilst avoiding potential risk to staff, the patient, equipment, or to the Trust.
3. Participate in the determination of when it is appropriate to call in Manufacturer's Service Representatives to carry out repairs and maintenance.
4. Inspect, maintain, and where appropriate calibrate Radiotherapy equipment and, if required, assist with the servicing of other electromedical equipment, at the direction of the Head of Radiotherapy Physics.
5. Undertake fault-finding and repair. Exercise judgement to determine and resolve the causes of faults in high-capital, highly complex patient-critical medical devices and systems, applying suitable fault-finding techniques to diagnose problems, including those beyond the scope of normal first-line maintenance.
6. Responsibility for producing and maintaining full records of all maintenance and repair work carried out on equipment.
7. Participate in the running up and late duty rosters and in emergency duties.
8. Maintain test equipment and apparatus used within the Group.
9. Commission new equipment in co-operation with physicists, doctors and radiographers.
10. Remove, re-deploy or dispose of redundant or surplus equipment, following agreed procedures.
11. Create and format spreadsheets and databases to meet departmental requirements.

Managerial Responsibilities

1. Make decisions and formulate a course of action, in critical areas and at times of emergency without supervision such that patient and staff safety is safeguarded and the departmental reputation is maintained or enhanced.
2. Maintain appropriate stocks of spare parts and supplies for the efficient provision of the Service, and follow agreed procurement and ordering procedures.
3. Determine, in consultation, when it is appropriate to call on Manufacturer's Service Representatives to carry out repairs and maintenance.
4. Encourage efficient communication between staff and maintain good working relationships at all levels.
5. Liaise with:
 - Equipment manufacturers to obtain information and provide feedback on equipment performance.
 - Clinical users to ensure that:
 - (a) there is a clear understanding gained of the nature and extent of clinical problems with equipment in order to assess the seriousness and implication of the problem in order determine a course of action to resolve the problem;
 - (b) there is a clear understanding how problems were resolved (or managed) and the impact this has on the clinical operation and/or availability of the equipment.
 - The Radiotherapy Physics group to ensure that Quality Assurance measurements are made as required after maintenance or repair of equipment.
6. Maintain high standards of health and safety and risk management.

Research and Development

1. Responsible for undertaking Research and Development work in Radiotherapy Engineering. Ensuring such activities are planned and executed in a timely manner and pertinent records are created and maintained. Ensuring a systematic level of testing is employed to ensure customer requirements are met and relevant technical and safety standards are adhered to.
2. Responsible for ensuring explicit and implied customer/client requirements are identified in detail.
3. Responsible for ensuring requirements are analysed and reviewed against safety and other standards, identifying conflicting issues.
4. Responsible for negotiating and agreeing complex development specifications, ensuring customer understanding of any limitations and implications.
5. Responsible for ensuring a systematic level of testing is employed to ensure customer requirements are met and relevant technical and safety standards are adhered to.
6. Responsible for the production of complex medical and other device prototypes.

Training / continuing professional development

1. Take positive steps to develop personal competence in Radiation Physics.
2. Participation in Continuing Professional Development is compulsory.
3. Keep abreast of the latest technical and scientific developments and their applications in medical and associated fields. Attend suitable seminars and courses as part of training and personal development and to further the work of the Department.
4. Attend training courses and seminars required to ensure the safe and efficient performance of the duties of the post.
5. Maintain a thorough knowledge of relevant current legislation.
6. Ensure all activities are carried out within a quality framework and conform to Statutory Regulations, approved Codes of Practice and Local Safety Rules
7. Organise and participate in the training of technical officers, radiographers and other clinical and technical staff as required.

Quality System

1. The post holder must ensure that work complies with defined standards of quality, quantity and timeliness. The ability to maximise cost effectiveness must be demonstrated at all times. The meticulous recording of required information is expected.
2. Participate in the development, operation and maintenance of appropriate Quality Systems for the Group.
3. Produce and maintain written procedures and protocols relating to the maintenance and support of radiotherapy and other equipment.
4. Produce and maintain full records of all maintenance and repair work carried out on equipment.
5. Assist in monitoring the effects of maintenance on machine downtime, and assist in suggesting improvements to procedures to minimise this. Responsible for implementation of agreed changes.

Other duties

1. Carry out all duties in accordance with the requirements of the Health & Safety at Work Act, relevant Statutory Regulations, Approved Codes of Conduct and Local Rules.
2. Take personal responsibility for promoting a safe environment and safe patient care by identifying areas of risk and following the Incident, Serious Incidents and Near Misses reporting policy and procedures.
3. Other duties as may be defined by the Clinical Director for Cancer Services to meet the changing needs of the service.
4. Even in stressful circumstances, the post holder must be capable of efficient liaison and professional teamwork with other hospital and university staff groups.

Conditions of Service

1. Confidentiality in patient-related information will be maintained at all times.
2. Compliance with a strict 'no-smoking' policy is required.
3. To be aware of and adhere to all Trust policies and procedures, the Health and Safety at Work Act and the Data Protection Act.
4. UCL Hospitals NHS Trust has adopted an Equal Opportunities Policy and specific regard should be taken of its content in relation to the treatment of employees or potential employees.
5. This job description is not intended to be exhaustive and it is likely that duties may be altered from time to time in the light of changing circumstances and after consultation with the post holder.

Other

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You will be expected to actively participate in annual appraisals and set objectives in conjunction with your manager. Performance will be monitored against set objectives.

Our Vision and Values

The Trust is committed to delivering top quality patient care, excellent education and world-class research.

We deliver our vision through [values](#) to describe how we serve patients, their families and how we are with colleagues in the Trust and beyond.

We put your [safety](#) and wellbeing above everything

Deliver the best outcomes	Keep people safe	Reassuringly professional	Take personal responsibility
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We offer you the [kindness](#) we would want for a loved one

Respect individuals	Friendly and courteous	Attentive and helpful	Protect your dignity
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We achieve through [teamwork](#)

Listen and hear	Explain and involve	Work in partnership	Respect everyone's time
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We strive to keep [improving](#)

Courage to give and receive feedback	Efficient and simplified	Develop through learning	Innovate and research
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Person Specification

Requirements	Essential	Desirable	Assessment Criteria			
			A	I	R	T/P
Knowledge and Qualifications	<p>First Degree or HND Equivalent in Physical Science, or equivalent level of knowledge</p> <p>State Registered Clinical Technologist or Eligible</p> <p>Professional Membership of a relevant professional body(e.g. IPPEM / IEE) or Eligible</p> <p>Knowledge of appropriate legislation [eg IRR, IR(ME)R, ISO 9001, BSI and ISO standards, professional and regulatory body reports and guideline]</p>		<p>✓</p> <p>✓</p> <p>✓</p>	<p>✓</p>		
Experience	<p>Specialist Knowledge of</p> <ol style="list-style-type: none"> 1) Computer Control Systems 2) Electrical and electronic engineering 3) Vacuum systems 4) X-Ray and Imaging Systems 5) Medical Device Management 6) Water cooling systems 7) Mechanical systems 8) Electromechanical systems 		<p>✓</p>	<p>✓</p>		

	<p>9) RF Systems</p> <p>Health and safety knowledge and understanding</p> <p>Experience and knowledge of quality assurance systems</p> <p>Logical approach to problem-solving, and attention to detail in technical work</p>		✓	✓		
		<p>Specialist training - Attendance of Manufacturers training courses and practical experience on Linear Accelerators, Cobalt, Orthovoltage and Superficial therapy machines, Simulators, CT simulators and CT scanners</p>	✓	✓		
		<p>A minimum of 5 years practical experience in Radiotherapy servicing workshop practises and techniques, covering preventive maintenance, servicing, inspection, repair, calibration, quality control, safety, acceptance testing and procurement</p>	✓	✓		
		<p>A minimum of 5 years experience in servicing and maintenance of radiation based equipment, including linear accelerators</p>	✓	✓		
		<p>Experience of electrical safety</p>				

		testing of medical devices				
Skills and Abilities	<p>Fault Diagnosis and Rectification, with the ability deal with complex and unpredictable situations</p> <p>Highly Complex data analysis skills</p> <p>Excellent interpersonal skills</p> <p>Microsoft Office Skills</p>		✓	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>		
Communication	<p>The ability to liaise effectively with scientific, medical and paramedical colleagues and to work effectively as a member of a team</p> <p>Ability to communicate complex technical material to colleagues and other professionals</p> <p>Good negotiation skills</p> <p>Show the ability to keep concise and accurate records of work done</p>			<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>	

Requirements	Essential	Desirable	Assessment Criteria			
			A	I	R	T/P
Personal and People Development	<p>Show ability to teach and train technical and non-technical staff in both formal and informal settings</p> <p>To Participate in Continuing Professional Development and maintain state registration</p>		<p>✓</p> <p>✓</p>	<p>✓</p>		

Specific Requirements	<p>High degree of manual dexterity, co-ordination & sensory skills.</p> <p>Able to use fine tools for accurate equipment adjustment/assembly</p> <p>Able to lift medium/heavy weights (e.g. lead shielding)</p> <p>Able to deal with occasional distressing circumstances when working in clinical areas (working around patients when machine has failed in Radiotherapy)</p>			✓	✓	
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A= Application Form
I= Interview
R-References
T/P=Test/Presentation