

JOB DESCRIPTION

JOB TITLE:	Lead Clinical Technologist, Radiotherapy Engineering	
DIVISION:	Medical Specialities	
SALARY BAND:	8A	
RESPONSIBLE TO:	Head of Radiotherapy Physics	
ACCOUNTABLE TO:	Senior Operations Manage, Medical Specialties Division	
HOURS PER WEEK:	37.5	
MANAGES:	Directly:	0
	Indirectly:	0
JOB SUMMARY: The Radiotherapy Physics Service is responsible for providing clinical, technical and scientific support to the Radiotherapy Department at the Royal Free London NHS Foundation Trust. The service is a multi-disciplinary team consisting of Clinical Scientists, Therapy Radiographers and Clinical Technology staff. This post is the only one within the RFL NHS FT that is concerned with the repair, maintenance, electro-mechanical calibration and performance checks on a wide range of highly specialised complex patient critical, therapeutic, diagnostic and dosimetry equipment and associated clinical systems within the Radiotherapy Service. The post includes training of other radiotherapy physics staff in the first line support of this highly specialised equipment. This highly specialised complex equipment includes 2 x Linear accelerators, a large Bore CT scanner and a low energy X-ray unit. The post holder is also expected to assist with collecting and analysis of highly complex clinical and non-clinical radiation dosimetric measurements for both routine and commissioning situations. In addition the post acts as the deputy and primary support to the Radiotherapy QA Manager for Radiotherapy's ISO 9001:2015 accredited quality management system and maintains the Radiotherapy Quality Assurance system management software "Q-Pulse". There is approximately a 60:40 split in the above roles with engineering being the 60% though depending on workload and schedules that split may vary quite considerably at certain times. The post-holder is responsible for: • Being the only member of staff in the Trust providing a highly specialised fault		

diagnosis and repair service on highly specialised, complex, very high cost, patient critical radiotherapy equipment. Frequently working autonomously without recourse to any other on-site specialist engineers. Further information and support would be gained from direct liaison with the equipment manufacturers.

- Performing preventative maintenance and quality assurance on a wide-range of highly specialised, complex, very high cost, patient critical radiotherapy equipment including treatment and diagnostic units, patient imaging systems, radiation dosimetry equipment and associated systems.
- Working to high standards of safety and accountability and ensuring that equipment is safe before it is returned to clinical use following maintenance and repair.
- Manage the training and mentoring of appropriate staff and trainees in all aspects of clinical engineering as it applies to radiotherapy, including the maintenance and repair of highly specialised, complex, very high cost radiotherapy equipment and quality assurance equipment.
- Liaising with a wide range of medical, clinical, scientific and technical staff within the Radiotherapy Physics Service, the Radiotherapy Department, other Trust departments and with external equipment manufacturers and service suppliers.

Date of the JD review: April 2024

MAIN DUTIES AND RESPONSIBILITIES

Royal Free World Class Values

The post holder will offer World Class Care to service users, staff, colleagues, clients and patients alike so that everyone at the Royal Free can feel:

- **welcome** all of the time
- confident because we are clearly **communicating**
- **respected** and cared for
- **reassured** that they are always in safe hands

Specific duties and responsibilities:

Exact duties will change as the needs of the service and the structure of the Cancer Centre develops. Duties presently comprise:

Management responsibilities

- a) Manage and prioritise own workload due to autonomous nature of engineering aspects of post.
- b) Take responsibility for engineering work managed by post holder but performed by other Trust staff.
- c) Ensuring that preventative maintenance and non radiation quality assurance checks are carried out to departmental protocol, are up to date and that the section's documentation conforms fully to the quality system.

- d) Informing the MPE responsible for Dosimetry or Head of Radiotherapy Physics on the status of the non radiation performance checks.
- e) Developing electronic databases using commercial software packages for maintaining accurate records of the radiotherapy physics service's quality assurance activity and performance (including monitoring quality assurance parameters, equipment adjustments, out of tolerance parameters, equipment concessions and non-conformances).
- f) Maintaining close liaison and effective communication channels with other staff in the Radiotherapy Service including radiographers, physicists, Clinical Oncologists, and staff in the Medical Electronics dept..
- g) Anticipate the requirement for replacement, upgrades and potential high costs to highly complex specialised equipment (including but not limited to linear accelerators) and to report this to the Head of Radiotherapy Physics in a timely fashion.
- h) Manage upgrade process of highly complex specialised high cost equipment (including but not limited to linear accelerators) and subsequent liaison with radiotherapy dept. Medical Physics Experts, radiotherapy physics, equipment suppliers and Head of Radiotherapy Physics as appropriate.
- i) To liaise with manufacturers, alternative suppliers, Trust procurement service, Trust finance dept. and budget holders in the procurement of stocks, supplies and equipment to maintain adequate stock control to support workloads whilst remaining within statutory requirements and good practice recommendations for medical devices. (Specific for 2 x budget holders, Radiotherapy Physics and Radiotherapy). Includes managing ordering of parts including all high cost items (circa £100,000) under the relevant equipment maintenance contracts and maintain inventories of items ordered.
- j) As the lead for engineering there is a requirement to plan, organise , supervise where appropriate and perform preventative maintenance, fault diagnosis, repair and performance checks on highly specialised, complex, very high cost radiotherapy and radiotherapy physics equipment, ensuring that all work is carried out in a timely and effective way and complies with the manufacturer's requirements, relevant regulations and quality standards. Additionally liaising with the relevant Medical Physics Expert (MPE) and other Clinical Scientists about this maintenance and the appropriate independent quality assurance checks required. Supervision will include but not exclusive to manufacturer's engineers and external contractors when working on the specialised equipment.
- k) To support and deputise for the Radiotherapy QA Manager implementing, controlling and maintaining the NHS England radiotherapy commissioning requirement for an ISO9001 accredited Radiotherapy Quality Assurance system throughout the Radiotherapy service. This would be primarily but not exclusively for the Radiotherapy Physics aspects of the QA system.

- l) Manage, maintain and support under administrator privileges the Radiotherapy Quality Assurance system management application “Q-Pulse” for i) software installation, ii) upgrades, iii) implementation and iv) development..
- m) To identify and issue controlled documents as per the ISO9001-2015 QA system via the electronic management software “Q-Pulse” which includes but is not exclusive to procedures, work instructions and forms ensuring there is adequate availability for the radiotherapy service.
- n) To ensure all controlled documentation is reviewed regularly and updated when necessary after authorisation by relevant staff.

Clinical and scientific responsibilities

- a) Providing highly specialised clinical engineering services for preventative maintenance, servicing, inspection, fault finding, repair and quality assurance of a wide range of very high cost, highly complex and highly patient critical equipment. Areas covered include radiotherapy linear accelerators, CT scanner, low energy kV units, calibration equipment and associated clinical systems.
- b) Developing and implementing technical protocols to reflect changes in professional guidelines, clinical practice and technology. Taking part in working parties to propose, develop and agree joint protocols that impact on the Radiotherapy Service.
- c) Monitoring clinical and scientific equipment performance to enable equipment failures to be accurately predicted.
- d) Undertaking advanced fault finding to component level requiring intense concentration on complex highly specialised equipment including very high voltage power systems, high vacuum systems, microwave generators and transmission lines, thermo-ionic emission devices, , electromechanical components, electronic servo systems, radiation dosimetry control systems, lasers, cooling systems, patient support devices, pneumatic and hydraulic systems, x-ray imaging systems, calibration instruments and other clinical devices.
- e) Applying suitable faultfinding techniques involving highly developed physical skills and high precision due to potential lethal nature of very high voltages within equipment to diagnose problems, including those beyond the scope of the manufacturer supplied information. Exercising judgement to determine the causes of faults in devices with multiple complex and inter-related systems that may be due to user error, equipment failure or environmental issues.
- f) Assess and decontaminate inside equipment when bodily fluids are released onto the treatment or diagnostic equipment and oversee and provide advice regarding decontamination of the exterior surfaces. Ingress of bodily fluids may require very high cost, highly complex and highly patient critical equipment to be partially disassembled for decontamination.

- g) Setting up and performing mechanical, optical, electronic and radiation system alignments, calibrations, acceptance testing, quality control, electrical and other safety checks on very high cost, highly sensitive and complex equipment, including radiation dosimetry equipment, treatment units, electronic portal imaging systems and other associated equipment. Planning and taking corrective action when quality control parameters are out of tolerance to ensure that the equipment is safe for clinical use.
- h) Checking that equipment performs to manufacturers' specifications.
- i) Prioritising the repair of clinical equipment, minimising downtime whilst ensuring user and patient safety at all times.
- j) Identifying to MPE and radiotherapy physicists what changes have been made to equipment after repair or maintenance such that appropriate measurements may be taken before that equipment is returned to clinical service such that it is returned in a fully functional and safe condition, liaising with medical and radiographic staff over issues of clinical priority and significant cancer service standards.
- k) Reporting incidents, faults, errors and hazards in accordance with departmental protocols.
- l) Participating in the rota system for the day-to-day operation of the section including preparing equipment for clinical use, calibration and the performance testing of clinical radiotherapy equipment, early morning and evening cover. This will entail working outside normal working hours.
- m) Ensuring that careful records of all work performed and other appropriate records are kept in accordance with the relevant quality standards and protocols.
- n) Where required ensuring that computer systems are backed up in accordance with section protocols.
- o) Negotiating access to clinical radiotherapy equipment for maintenance and repair with other health professionals.
- p) Providing advice on equipment specification, evaluation and selection.
- q) Liaising with manufacturers to obtain information and provide feedback on equipment performance.
- r) Using clinical expertise and experience to identify areas of concern that could lead to possible risks within the radiotherapy department through on-going formal and informal risk assessments.
- s) Acting as an "operator" under the statutory instrument The Ionising Radiation (Medical Exposure) Regulations 2017 IR(ME)R in accordance with Trust policies, procedures and work instructions.
- t) After suitable training to collect and analyse radiation dosimetric data for either equipment calibration or patient measurement as directed by the relevant MPE.

- u) Work outside normal working hours on occasion when required.

Professional responsibilities

- a) Maintaining the highly specialist technical knowledge of modern radiotherapy practice required of this post by maintaining an appropriate Continuing Professional Development (CPD) program. This may involve attending seminars and courses at educational establishments, other hospitals and manufacturers' training centres, which may require travel (including abroad) and time away from home.
- b) Taking account of the legal and ethical considerations when exercising professional self-regulation within radiotherapy engineering, ensuring that all activities are carried out in an accredited quality framework and meet regulatory requirements, approved codes of practice, professional standards, Statutory requirements as required under the Ionising Radiation Regulations 2017 and Ionising Radiation (Medical Exposures) Regulations 2017 and accepted best practice.

Teaching, training and research responsibility

- a) Manage and oversee training of physics staff on first line maintenance of highly complex, specialised, high cost patient critical equipment notably linear accelerators. This would involve both theoretical and practical training in all aspects including health and safety of clinical engineering as it applies to the radiotherapy equipment.
- b) Manage and oversee training of radiotherapy staff regarding availability for daily operation of highly complex, specialised patient critical equipment primarily linear accelerators.
- c) Supervising and training trainee clinical scientists for their engineering teaching during their radiotherapy physics placement.
- d) Assessing the competency of physics staff, trainees and other Trust staff as required in clinical radiotherapy engineering of highly complex, specialised patient critical equipment notably linear accelerators, ensuring that training records and assessment forms are completed on time.
- e) Preparing talks, reading lists, seminars and tutorials to support the training activities of the Service.
- f) Evaluating medical and support equipment as required as it applies to radiotherapy.
- g) Participating in applied research and development programs and clinical audit, to improve the equipment and clinical techniques used for radiation therapy.
- h) Developing and constructing new and novel devices to support the clinical activities of radiotherapy and the radiotherapy physics service.

Communication responsibilities

- a) Communicating highly complex technical information and advice relating to machine operation, fault diagnosis, repair and user and patient safety, to members of the radiotherapy physics service, other health professionals and outside organisations.
- b) Receiving information from clinical users that may be incomplete or contradictory and assessing the seriousness and implications of the problem and responding appropriately.

Freedom to act

- a) Due to autonomous nature of post the post-holder will be expected to act independently though within clearly defined technical guidelines, manuals, protocols and procedures consistent with best professional practice. Accountable for own actions but recognises those situations where advice should be sought before proceeding.

Other duties

- a) Any other duties commensurate with the grade and in line with the requirements of this post.
- b) This job description gives a general outline of the post and is not intended to be inflexible or a final list of duties. It may therefore be amended from time to time in consultation with the post holder.

GENERAL RESPONSIBILITIES

Infection Control

Infection control is everyone's responsibility. All staff, both clinical and non clinical, are required to adhere to the Trust's Infection Prevention and Control policies and procedures and the Health Act (2006) Code of Practice for the prevention and control healthcare associated infections and make every effort to maintain high standards of infection control at all times thereby reducing the risk of Healthcare Associated infections.

It is the duty of every member of staff to take personal responsibility for the prevention and control of infection, as laid down in the Trust's policies and procedures which reflect the statutory requirements of the Hygiene Code.

- To work in close collaboration with the Infection Control Team.
- To ensure that monitoring of clinical practice is undertaken at the agreed frequency.
- To ensure that the ward environments are cleaned and maintained to the highest standards; ensuring that shortfalls are rectified, or escalate as necessary.

- To ensure that all relevant monitoring data and issues are provided to the Directorate's Governance structures.
- To ensure that all staff are released to attend infection control-related educational sessions and staff with specialist roles, e.g. link practitioners, are released to undertake their duties.

Health and Safety at Work

The post holder is required to:

- Take reasonable care for the health and safety of himself/herself and other persons who may be affected by their actions or omissions at work.
- Co-operate with the employer in ensuring that all statutory and other requirements are complied with.

Confidentiality & Data Protection

The post holder has a responsibility to comply with the Data Protection Act 1998 and maintain confidentiality of staff, patients and Trust business.

If you are required to process information, you should do so in a fair and lawful way, ensuring accuracy is maintained. You should hold information only for the specific registered purpose and not use or disclose it in any way incompatible with such a purpose.

You should disclose information only to authorised persons or organisations as instructed. Breaches of confidentiality in relation to information will result in disciplinary action, which may include dismissal. Employees are expected to comply with all Trust policies and procedures and to work in accordance of the Data Protection Act 1998. For those posts where there is management or supervision of other staff it is the responsibility of that employee to ensure that their staff receive appropriate training (e.g. HISS induction, organising refresher sessions for staff when necessary.)

Conflict of Interest

The Trust is responsible for ensuring that the services for patients in its care meet the highest standards. Equally, it is responsible for ensuring that staff do not abuse their official position, to gain or benefit themselves, their family or friends.

Equality and Diversity

The Trust values equality and diversity in employment and in the services we provide. It is committed to promoting equality and diversity in employment and will keep under review our policies and procedures to ensure that the job related needs of all staff working in the Trust are recognised. The Trust aims to ensure that all job applicants, employees or clients are treated fairly and valued equally regardless of sex, marital status, domestic circumstances, age, race, colour, disablement, ethnic or national origin, social background or employment status, sexual orientation, religion, beliefs, HIV status, gender reassignment, political affiliation or trade union membership. Selection for training and development and promotion will be on the basis of the individual's ability to meet the requirements for the job.

You are responsible for ensuring that the Trust's policies, procedures and obligation in respect of promoting equality and diversity are adhered to in relation to both staff and services.

Vulnerable Groups

- To carry out responsibilities in such a way as to minimise risk of harm to children, young people and vulnerable adults and to promote their welfare in accordance with the Children Act 2004, Working Together to Safeguard Children (2006) and No Secrets guidance (DH 2000).

- To demonstrate an understanding of and adhere to the trust's child protection policies.

Smoke Free

The Trust implements a Smoke Free policy that applies to all staff. Staff are not allowed to smoke while wearing a recognisable Trust uniform or visible trust identification badge, and not allowed to smoke anywhere on hospital grounds. Staff are not allowed to take additional breaks in order to smoke. They may smoke during designated breaks but only out of uniform and off site. Staff contravening this policy may be subject to disciplinary procedures.

Standards of dress

All staff are expected to abide by the Trust's guidance on standards of dress.

This job description outlines the current main responsibilities of the post. However the duties of the post may change and develop over time and may therefore be amended in consultation with the post holder,