**NHS GREATER GLASGOW & CLYDE**



**JOB DESCRIPTION**

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| 1. **JOB IDENTIFICATION**
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| **Job Title:****Responsible to:** | Consultant Clinical ScientistLead Physicist, SABRConsultant Clinical Scientist, Scientific Lead (Clinical Planning & Imaging) |
| **Department:** | Radiotherapy Physics, Department of Clinical Physics and Bioengineering (DCPB), Beatson West of Scotland Cancer Centre, Gartnavel & Monklands Hospitals, Diagnostic Directorate, Acute Services Division |
| 1. **JOB PURPOSE**
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| The Consultant Clinical Scientist, Lead Physicist, SABR leads the scientific support and services for the effective management and development of stereotactic ablative radiotherapy (SABR) in the Beatson West of Scotland Cancer Centre and will play a key role in supporting the Scottish Oligometastatic Radiotherapy Network (SORN). This post is within the Treatment Planning & Imaging Section of Radiotherapy Physics of the Department of Clinical Physics and Bio-Engineering (DCPB).  |
| 1. **ROLE OF THE DEPARTMENT**
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| Radiotherapy Physics provides a comprehensive clinical physics service to the Beatson West of Scotland Cancer Centre, which is one of the largest UK cancer treatment centres providing radiotherapy treatment for more than 7,000 patients per annum in the west of Scotland. Its main base is at Gartnavel General Hospital, Glasgow with a Satellite Facility located at Monklands Hospital in Airdrie.The Department of Clinical Physics and Bioengineering (DCPB) provides specialist medical physics and clinical engineering services to NHS Greater Glasgow & Clyde and other West of Scotland Health Boards. These include Medical Equipment Management, Clinical Engineering, Imaging Physics (Nuclear Medicine and MRI), Core Services (Health Physics, Radionuclide Dispensary and PET Radiopharmaceutical Production Unit) and Radiotherapy Physics. It is one of the largest medical physics and clinical engineering departments in the UK, comprising over 350 staff.  |
| **4. ORGANISATIONAL POSITION**  |
| The Consultant Clinical Scientist, whose organisational position is shown on the attached Organisation Chart, is:* 1. Accountable to the Chief Executive through the General Manager of Diagnostics Directorate, and responsible for the work and duties assigned through the Head and Deputy Head of Radiotherapy Physics, and the Scientific Lead (Clinical Planning & Imaging).
	2. Responsible to the Scientific Lead (Clinical Planning & Imaging) in managing and developing the SABR planning and imaging service. This will include highly specialised planning and checking, allocation of planning work, leading on the development of new SABR techniques and working closely with the Heads of Radiotherapy Imaging and Dosimetry in managing and developing imaging and dosimetric verification techniques for SABR. Participates in recruitment and staff selection and disciplinary processes, where necessary. Responsible also for the full range of scientific and technical support provided within the Planning & Imaging section including the provision of specialist advice and guidance as a Medical Physics Expert, and managing and providing all aspects of routine service delivery and clinical service development.
	3. Responsible for working closely on a daily basis with the Scientific Lead (Clinical Planning & Imaging), Head of Imaging and relevant Heads of Section to assist the Head and Deputy Head of Radiotherapy Physics manage the full range of scientific and technical support provided by Radiotherapy Physics.
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| **5. SCOPE AND RANGE** |
| Referrals for radiotherapy treatment across a wide range of malignant disease, originate from seven Health Boards (Ayrshire and Arran, Borders, Dumfries and Galloway, Forth Valley, Greater Glasgow & Clyde and Lanarkshire) and for non-routine specialised treatments from all the Scottish Health Boards.* 1. Radiotherapy Physics consists of Clinical Scientists and Clinical Technologists organised in three groups: Equipment and Dosimetry, Treatment Planning & Imaging (incorporating Brachytherapy Physics) and the Clinical Physicist Pool. Radiotherapy Physics has its own program of ongoing scientific research and development.
	2. External beam radiotherapy treatments are provided using eleven linear accelerators at the Beatson (Glasgow) and two accelerators based in Monklands, which together with CT simulators, MR Simulator, treatment verification systems and a low energy x-ray treatment unit have a capital value in excess of £30M.
	3. Radiotherapy Physics staff work closely with Multidisciplinary Teams of Clinical Oncologists, Radiographers and Nurses. Radiotherapy Physics staff support a wide range of specialist clinical services by carrying out radiotherapy treatment planning, brachytherapy physics, radiation dosimetry, equipment management, quality assurance, medical imaging and supporting networked radiotherapy patient information systems. Staff lead and support clinical developments and research, and provide education for multidisciplinary staff, trainees and students. This includes the delivery of post graduate teaching courses for the University of Glasgow.
	4. Within Clinical Planning & Imaging, Clinical Physicists plan, lead, undertake, coordinate and deliver the wide range of support services for the radiotherapy systems and facilities used in support of treatment planning, imaging and verification. Clinical Physicists will ensure that external beam treatments are optimally planned for individual patients using the Centre’s computerised treatment planning systems, calibration of the Centre’s linear accelerators and imaging systems equipment according to national standards and protocols, measuring scientific data to allow reliable and accurate planning calculations and providing a clinical in-vivo dosimetry service. In addition, staff may undertake software development, support major capital equipment procurements, including preparing equipment specification and assessing tender responses, supervise and undertake equipment commissioning, acceptance and routine testing to national standards, develop and implement new techniques and technologies and design new quality assurance and performance testing regimes.
	5. Staff within the Service, some of whom may be State Registered Clinical Scientists, may be delegated to undertake specific roles and this may include acting as a Medical Physics Expert to provide scientific advice in radiotherapy equipment and radiation dosimetry matters, as required by the Ionising Radiations (Medical Exposure) Regulations, and to act as System Manager, and/or System Administrator, for the Centre’s clinical radiotherapy and information management systems.
	6. Work carried out within the Service complies with the Beatson’s ISO 9001(2015) Quality Management System and with legislation, including the Ionising Radiation Regulations (2017) and the Ionising Radiation (Medical Exposures) Regulations (2017), and staff participate in the ongoing development of quality systems and procedures.
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| **6. MAIN DUTIES/RESPONSIBILITIES** |
| 1. **Managerial**

The Consultant Clinical Scientist, works to plan, design, prioritise and deliver specialist scientific to support to meet the Beatson’s requirements, with emphasis on the clinical use and development of SABR techniques in treatment planning, imaging and dose verification. The postholder:* 1. Is responsible to the Scientific Lead (Clinical Planning & Imaging) for the scientific management of the SABR planning and imaging service within the Radiotherapy Physics. This includes supervising and contributing to the management and monitoring of work and the service provided, including the commissioning, software development, quality control testing and development of highly complex, high capital value radiotherapy planning and imaging systems and equipment.
	2. Is accountable, through the Scientific Lead, Deputy Head and Head of Radiotherapy Physics to the Scottish Radiotherapy Programme Board (SPRB), for the management and development of Oligometastatic SABR at the Beatson, and for providing advice and support to the wider SOSN. This will include providing service updates to the SOSN meeting framework.
	3. Implements quality standards, prepares written protocols complying with the Beatson’s Quality System and provides a range of support services in accordance with national requirements and consistent with the Beatson’s reputation as an international centre of excellence.
	4. Deputises for the Scientific Lead (Clinical Planning & Imaging) for short term cover as appropriate.
	5. Responsible to the Scientific Lead (Clinical Planning & Imaging) for the safe interpretation and implementation of the recommendations and requirements of statutory legislation and extant national and international protocols, where appropriate, in the safe use, calibration and quality control testing of the comprehensive range of radiotherapy equipment in the Department used for the purposes of treatment planning and imaging for external beam planning and brachytherapy treatments.
	6. Supports the Scientific Lead (Clinical Planning & Imaging) to ensure that staff are trained and available to support clinical demand, are available to provide expert scientific advice to clinical and radiography staff at both the Gartnavel and Lanarkshire Beatson sites, and that systems and procedures are fully maintained in accordance with clinical requirements at both sites. Fulfilment of this responsibility is likely to require regular attendance at the Lanarkshire Beatson site, typically for approximately 20% of the working time.
	7. Responsible for planning, designing and directing the programmes of quality assurance necessary for optimum running of the SABR service and related equipment in the Centre, consistent with extant national standards and radiation legislation.
	8. Supports the System Manager, for the all specialised software and computer systems implemented by Radiotherapy Treatment Planning Section, used in the support radiotherapy treatment planning, quality assurance and other clinical and scientific purposes for accurate patient treatments. May act as a System Administrator, where designated by the Scientific Lead (Clinical Planning & Imaging), for aspects of one or more of the radiotherapy information, image and management systems, ensuring appropriate and safe configuration of such systems.
	9. Takes the scientific lead in special projects as appropriate and where delegated related to service development, with emphasis on SABR for oligometastatic and primary disease.
	10. Manages the training of multi-disciplinary staff in matters related to new radiotherapy technologies and new clinical techniques.
	11. Supports the management and development of the BOC's ISO 9001 (2015) Quality System within Treatment planning and the wider Planning and Imaging Section, participating fully in all aspects of the Quality System within Radiotherapy Physics.
	12. Supports the Scientific Lead (Clinical Planning & Imaging) to ensure that Clinical Scientists within Treatment Planning maintain and develop their experience in accordance with the Knowledge and Skills Framework (KSF), Continuing Professional Development (CPD) and requirements for Personal Development Planning (PDP).
	13. Ensures that the work undertaken by the Treatment Planning Section complies with the Health and Safety at Work, Etc Act (1974) and with other relevant extant legislation, national quality standards and Trust Procedures, as appropriate.
	14. Takes responsibility for the timely and safe production and accuracy of optimised treatment plans for patients receiving radiotherapy treatments, to ensure national and local waiting time targets are achieved, and adopts efficient and effective methods to keep planning pathways at minimal and safe levels.
	15. Innovates and introduces novel planning and imaging techniques, developing policies, procedures and work instructions and implements changes arising from professional guidelines, new clinical trials, clinical practice and technology. Liaise with clinical colleagues regarding the impact of changes and develop joint protocols where required.
	16. As determined jointly by the Scientific Leads for Planning & Imaging and for dosimetry & Equipment, innovates and introduces new methods of dosimetric verification for SABR.Develops policy, procedures and work instructions and implements changes arising from professional guidelines, new clinical trials, clinical practice and technology associated with SABR. Liaise with clinical colleagues regarding the impact of changes and develop joint protocols where required
	17. Undertakes Project Management as directed by the Scientific Lead (Clinical Planning & Imaging).
	18. Liaises closely with the Scientific Lead for Dosimetry & Equipment, and the Lead Dosimetry Physicist in the matters of common interest, especially verification of SABR and including management of planning system configuration data and in vivo dosimetry programmes.
	19. Prepares and submits reports, performance data, statistical information etc, relevant to the running of the service.
	20. As part of the Radiotherapy Physics management team, and on a rota basis, contributes to the effective management and development of Radiotherapy Physics at the Beatson (Monklands), ensuring a high quality, safe and innovative scientific and clinical service is delivered at the Lanarkshire Beatson.
1. **Clinical Scientific**
	1. Acts as a Medical Physics Expert, under the Ionising Radiation (Medical Exposures) Regulations (2017), where approved by Head of Radiotherapy Physics.
	2. Acts as an Operator, under the Ionising Radiation (Medical Exposures) Regulations (2017), with responsibility for complying with the employer’s procedures for work with ionising radiation.
	3. Supports with the development of radiotherapy capital programmes, the assessment of service needs, the preparation of equipment specifications and the evaluation of equipment, treatment techniques and new technologies with emphasis for the purposes of radiotherapy imaging.
	4. Supports the Scientific Lead (Clinical Planning & Imaging) in ensuring that all software designed and implemented by Radiotherapy Treatment Planning, particularly those used for clinical use, complies and fulfils the requirements of extant national and international standards eg. the Data Protection Act, the Copyright Designs and Patent Act 1988, ISO standards (ISO 12207, ISO 17799) and other extant Divisional policies and procedures for software development. Responsible for life cycle management of this software and the production and distribution of relevant software documentation.
	5. Supports with the development of radiotherapy capital programmes, the assessment of service needs, the preparation of equipment specifications and the evaluation of equipment, treatment techniques and new technologies with emphasis for the purposes of radiotherapy treatment planning.
	6. Provides expert advice to Consultant Oncologists, Radiographers and Mould room staff on individual patient treatments. This involves interaction with patients in association with other staff members.
	7. Participates in departmental procedures for quality assurance and assessment of dosimetric data for patients suspected of involvement in radiation incidents.
	8. Provides highly specialist advice to Consultant Oncologists on application of radiobiological corrections in order to modify treatment prescriptions where treatments have been interrupted.
	9. Responsible for taking the scientific lead in the scientific and clinical implementation and future development of radiotherapy equipment at the Centre and ensures the establishment of a research and development programme aimed at establishing the Beatson as a centre of specialist expertise in the field.
	10. Participates in local, national and international standardisation and inter-comparison projects designed to give consistent dose information for use by medical staff involved in trials.
	11. Initiates, defines, organises and participates in the implementation of new planning and treatment techniques, clinical trials and procedures applied within the Beatson across the site specific teams and in the prospective and retrospective analysis of patient data.
	12. Maintains and monitors the accuracy of data applied to treatment planning procedures.
	13. Manages and participates in the installation, commissioning and acceptance testing of new and replacement radiotherapy equipment, planning systems, imaging systems etc.
	14. Supports the Scientific Lead in ensuring the beam models implemented within dose calculation systems are suitable for the intended clinical applications and that the uncertainties associated with dose calculation algorithms are characterised, documented and appropriately communicated.
	15. Interprets highly complex patient treatment planning referrals where it is not straightforward to determine an advanced and patient specific planning solution or there is no documented protocol that achieves an appropriate balance between delivering a high enough dose of radiation to a tumour and avoiding unacceptable damage to healthy organs at risk such as eyes or spinal cord. In these cases, provides specialist advice to medical staff on appropriate treatment planning techniques.
	16. Undertakes routine and highly complex planning and dosimetric calculations for external beam radiotherapy. Generates choices of clinically acceptable and optimised treatment plans for individual patients receiving external beam radiotherapy in accordance with Clinical Prescriptions and protocols, with emphasis on highly specialised SABR techniques.
	17. Prepares plan and patient treatment reports that give clear instructions to other staff groups to ensure the safe and accurate delivery of clinical set-ups and treatment parameters.
	18. Responsible for checking that treatment plans, particularly those of a complex or high-risk nature (where there is considerable potential for errors that could have serious clinical consequences) produced by other members of staff are correct and of acceptable clinical quality. The checker also ensures that the work undertaken meets high professional and technical standards.
	19. Provides specialised scientific and expert advice to support the day to day clinical in vivo dosimetry service in the measurement of patient radiation doses received during radiotherapy treatments.
	20. Provides scientific advice and instructs Radiography, Mould Room and other staff on individual patient treatments and on the safe and proper use of radiotherapy and imaging equipment, attending the set-up of patients on radiotherapy equipment, as required, to advise clinicians on the selection of the appropriate simulation and treatment technique
	21. Undertakes troubleshooting for operational problems or scientific assessment following eg. software upgrades on specialised radiotherapy equipment, imaging systems and software.
	22. Collaborates with Consultant Oncologists in the evaluation of patient treatments and in the preparation of new and novel planning techniques and clinical trials, advising Consultant Oncologists on the feasibility of implementing new patient treatments using radiotherapy equipment and to lead in their implementation.
	23. Supports the implementation of the recommendations and requirements of statutory legislation and extant national and international protocols and recommendations, where appropriate, including the definitive calibration and measurement of absorbed radiation dose data for the comprehensive range of radiotherapy and Brachytherapy treatment equipment.
	24. Liaises closely with the Consultant Clinical Physicists in the Treatment Delivery Service and with the Consultant Clinical Physicists in the other Services to ensure an integrated clinical physics service.
	25. Designs and delivers appropriate training for the scientific and technical staff in Clinical Planning and Imaging, liaising with the Deputy Head of Radiotherapy Physics and the Planning Services Manager as appropriate.
	26. Initiates, designs and directs improvements to Treatment Planning Systems, imaging equipment, associated software, ancillary equipment as necessary.
	27. Takes a lead in the evaluation and implements actions resulting from equipment safety action notices, adverse equipment/software performance, product notifications etc relevant to their service.
	28. Liaises with external Suppliers and organisations, and assists in organising external presentations by equipment manufacturers, visits to Radiotherapy Physics by scientists and staff from other organisations.
	29. Keeps informed on scientific progress in radiotherapy physics and on all relevant regulations and legislation through literature, attendance at meetings, etc.

**C. Teaching & Training*** 1. Participates in the organisation and delivery of radiotherapy physics teaching and specialist training of clinicians, radiographers, nurses, scientific and technical staff and students, including those assigned to the Service for training purposes, those attending relevant university degree courses and those undertaking Training Schemes such as the Scottish Medical Physics and Clinical Engineering Training Scheme.
	2. Plans and delivers components of the University of Glasgow MSc Training Programmes for Clinical Scientists, where relevant.
	3. Participates in training of Clinical Oncologists on the Scottish Oncology Course.
	4. Ensures that Clinical Physicists within Treatment Planning develop their experience in accordance with the Knowledge and Skills Framework (KSF), Continuing Professional Development (CPD) and requirements for Personal Development Planning (PDP).

**D. Research and Development**Research and development are essential for continuous service improvement and to ensure that the potential of complex new equipment, facilities and treatment modalities is fully realised. The postholder:* 1. Plans, undertakes, supervises and supports appropriate research and development projects in radiotherapy, as required by the Scientific Lead (Clinical Planning & Imaging) and in accordance with corporate direction but with an emphasis on SABR for primary and oligometastatic treatments.
	2. Undertakes the commissioning and acceptance testing of newly developed and modified devices and systems for patient treatment including those designed and constructed in-house.
	3. Makes recommendations and advises on new equipment or techniques that will lead to an improvement in the quality of service delivery.
	4. Supports with clinical planning advice the preparation of research applications and proposals under the guidance of the Scientific Leads and Head / Deputy Head of Radiotherapy Physics This will include applications for research funding from external sources.
	5. Supports the implementation of clinical trials through the preparation of trial-compliant planning procedures, provision of expert scientific advice to trial Principal Investigators and the provision of Quality Assurance procedures required for clinical trials.
	6. Keeps informed on scientific progress in radiotherapy physics and on all relevant regulations and legislation through literature, attendance at meetings, etc.
	7. Conducts project management tasks as allocated by the Head & Deputy Head of Radiotherapy Physics.

**F. Professional**Undertakes the personal development necessary to maintain the high quality of the service provided and takes a leading role in service developments. This includes attending suitable seminars and manufacturers’ specialist residential courses in order to keep up to date with the latest electronic and scientific, developments and their clinical applications in radiotherapy. |
| **7. SYSTEMS AND EQUIPMENT** |
| The postholder must have knowledge and specialist understanding of the theory, operation, function and operating principles of radiotherapy equipment and systems, used within Radiotherapy Physics and across many staff groups and services within the BOC, including the following systems and equipment: * 1. All equipment related to radiation treatment delivery including linear accelerators with multileaf collimators, stereotaxy delivery systems, on-board x-ray imaging systems, portal imaging devices, respiratory gating, dosimetry calibration systems, radiation room safety systems, and laser alignment systems for patient positioning.
	2. Patient radiotherapy treatment recording and verification systems, including associated networked systems used to manage patient treatment data and medical images.
	3. Other radiation treatment equipment including kilovoltage x-ray equipment, brachytherapy afterloading equipment, therapeutic radiation sources and associated handling equipment.
	4. Equipment used in the design of patients’ radiation treatments including x-ray treatment simulators, CT simulators, MR simulators, diagnostic x-ray equipment, electronic contouring systems and networked computerised treatment planning systems.
	5. Radiation treatment measurement and quality assurance equipment including beam data acquisition systems, radiation beam profilers, ion chambers, dosimetry phantoms and solid state dosimetry equipment.
	6. Radiotherapy patient information system, PC systems, critical data archiving systems, and computer peripherals.
	7. Highly complex mathematical algorithms applied in the calculations used by treatment planning software and systems.
	8. Radiotherapy Treatment Planning systems, including Eclipse Treatment Planning system.
	9. System design and operation of networked databases, spreadsheets and a range of quality assurance and medical equipment software and systems used extensively by Radiotherapy Physics and other BOC staff (eg, ARIA, Eclipse Treatment Planning, QPulse).
	10. Software systems include Microsoft (Word, Excel, Access, PowerPoint and Project) and programming tools for project design.
	11. ISO9001:2015 Quality Management System and associated documentation.
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| **8. DECISIONS AND JUDGEMENTS** |
| * 1. The post-holder is expected to use their own initiative to prioritise, action and make the decisions and judgements required to support the priorities and directions in which efforts and resources of the Planning section have to be directed in order to meet the demands of new developments, whilst maintaining and developing increasingly exacting quality processes.
	2. Interprets highly complex multi-factorial problems and ensures that appropriate action is taken to safeguard and optimise patient safety. The postholder advises and takes decisions that impacts both individual and large number of patient radiation treatments.
	3. Ensure various radiotherapy systems and software are appropriately configure, advising and providing guidance on the extent and limitations to the accuracy of radiation dosimetry data, treatment planning systems, where error could lead to significant consequences for individual or large number of patients.
	4. Investigate and interpret a wide range of scientific and technical literature, national standards and codes of practice, with a view to establishing and implementing effective quality assurance procedures and safety checking systems for radiotherapy equipment.
	5. Undertake detailed studies of scientific practices and data related to radiation dosimetric performance and initiate modifications to modify and improve existing procedures.
	6. Supervise and undertake the design and implementation of new, highly complex software for patient treatments.
	7. Identify, formalise and initiate processes involving multi-disciplinary teams for safe clinical implementation of new clinical techniques.
	8. Modify existing practices in the light of new legislation, guidelines or results of research from other centres.
	9. Assess the impact of errors or incidents and advise on the best course of action to rectify or compensate for these.
	10. Manage workflow with a high volume of requests and changing objectives, assign priorities and adapts these to meet changing clinical demands
	11. Interprets highly complex technical and clinical data (including radiotherapy treatment planning and calculations, treatment machine parameters and performance, treatment planning computer systems, dosimetry systems and measurements, and biological calculations) and, on the basis of this, provides highly specialist advice to medical and other staff.
	12. Provide advice and solutions to unexpected clinical problems where a range of options might be available, for example advising clinicians on the best approach for treating complex tumour sites where standard techniques do not produce acceptable dose distributions.
	13. Works unsupervised on a day-to-day basis and has a high degree of autonomy in leadership, management and decision making within their specialty.
	14. Analyses and interprets national guidelines, legislation, published reports and papers and implements appropriately within the service, implementing new cancer treatment techniques in association with clinical staff.
	15. Manage workflow with a high volume of requests and changing objectives, assign priorities and adapts these to meet changing clinical demands.
	16. Manage and maintain confidential staff and patient information including sensitive clinical details of which the patient may be unaware.
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| **9. COMMUNICATIONS AND RELATIONSHIPS** |
| The postholder is expected to operate relatively autonomously although in regular in communication with other Heads of Section, communicates internally and externally as follows: |
| **People/Organisation** | **Purpose** |
| Radiotherapy Physics  | 1. Communicates verbally and in writing decisions often of a highly complex nature and provides sound explanations and justifications for such decisions. Communicates thoroughly reasons for decisions.
2. Involves staff in discussions on a wide ranging strategic and service issues. Sets standards as required.
3. Leads Section staff meetings and participates in various senior staff meetings where required. Communicates daily with Section Heads.
4. Communicates with radiotherapy physics staff on radiotherapy imaging matters relating to clinical use of radiation equipment, quality assurance and patient safety.
5. Communicates with scientific colleagues at other Radiotherapy Centres both in the UK and abroad.
6. Informs and educates colleagues on current imaging and developments, through informal discussion and presentations.
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| Therapeutic Radiographers  | 1. Communicates to gain a clear understanding of problems with equipment or treatment implementation.
2. Gives advice on difficult planning problems with complex treatments (patient set-up, etc).
3. Collaborates on scientific developments in clinical practice.
4. Provides expert scientific advice on physical aspects of treatment problems.
5. Advises on new equipment and procedures. Provides training as appropriate.
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| Nursing Staff | 1. Communicates about equipment developments, problems, faults and supplier’s visits
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| Clinical Oncologists | 1. Provides advice on a broad range of highly complex scientific and technical matters including safety and use of equipment, treatment techniques, departmental procedures, and effective use of resources.
2. Provides expert scientific advice on clinical service developments and research projects to senior clinical staff.
3. Provides expert advice on scientific matters pertaining to treatment and any untoward events.
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| Students and Trainees | 1. Gives lectures, tutorials and technical advice on radiation physics and technology to students, trainee clinical scientists, trainee clinical technologists, physics students, medical students, registrars, student radiographers, nurses, etc.
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| Manufacturers’ Agents | 1. Discusses detailed and complex technical information about treatment planning and specialised software and computer systems.
2. Resolves problems and faults on treatment planning and associated safety systems. Negotiates and complains as necessary
3. Acquires specialist scientific and technical information relating to new equipment and systems in relation to specifications for purchase, installation and clinical use.
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| **10. PHYSICAL, MENTAL, EMOTIONAL AND ENVIRONMENTAL DEMANDS OF THE JOB** |
| * 1. Frequent requirement to maintain high levels of intense concentration over long periods when using highly complex computerised treatment planning/imaging systems utilising highly developed keyboard skills, which demands maintaining a controlled posture throughout.
	2. High levels of mental agility, numerical competency, manual dexterity, coordination and advanced spatial awareness required for complex treatment planning using specialist computer software.
	3. Requirement to change tasks, often at short notice that arises in a busy, demand led service in which they manages competing priorities, short timescales and significant associated clinical pressures.
	4. Regular requirement to respond to urgent treatment problems, make rapid decisions, and implement essential actions which could affect patient treatment such as recommending withdrawal of equipment from clinical use.
	5. Requirement to exert moderate physical effort and to undertake high precision machine QA checks, fractional millimetre accuracy with manual dexterity, which may require the lifting and handling of heavy equipment (QA equipment, phantoms, shielding blocks, etc).
	6. Occasional requirement to meet patients in stressful and challenging meetings, communicating reasons for decisions where scientific knowledge and understanding is absent.
	7. Requirement to operate radiation equipment that produces ionising radiation and on occasion, may be exposed to ionising radiation.
	8. Regular exposure to potentially distressing or emotional circumstances in clinical areas where cancer patients receive radiation treatment, including occasional exposure to distressing or emotional circumstances.
	9. Occasionally, may have unavoidable exposure to body fluids when in attendance in clinical areas.
	10. Frequent requirement to provide urgent, clinical advice eg. to provide immediate dosimetric and planning advice to allow a patient to proceed to treatment where decisions will impact the success or otherwise of individual patient treatments.
	11. The post-holder is occasionally required to attend operating theatre.
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| **11. MOST CHALLENGING/DIFFICULT PARTS OF THE JOB** |
| * 1. To be responsible for the safe clinical implementation of new technology when there is little or no external guidance on how to do this and on any potential hazards or pitfalls that could have serious clinical implications for patients.
	2. Supporting an effective service to specification within a complex, rapidly-changing clinical environment characterised by competing, changing priorities and timescales.
	3. Leading the team in a variety of complex demand-led situations in an assured and tactful way to achieve an effective outcome for patients when clinical pressures are applied by users to prioritise clinical urgencies
	4. Ensuring that radiotherapy planning systems are commissioned and configured safely and in accordance with national standards, taking final responsibility for the release of new and modified equipment for patient use where the risk of any error would have serious clinical consequences for patients and the Department.
	5. Provision of highly specialist, expert advice affecting cancer treatment whilst coping with high workloads and demands for both routine and developing services, requiring the ability to shift between demanding and critical tasks at short notice, with frequent interruption to deal with other matters that need urgent clinical attention.
	6. Provision of scientific support that requires response, at short notice, to undertake essential equipment checks following the repair or upgrade of highly complex radiotherapy equipment and other clinical equipment such that clinical downtime is minimised.
	7. Maintaining and developing specialist knowledge continuously, across a broad range of highly scientific areas in line with constantly changing developments in radiotherapy and associated technologies with a vision to develop the clinical service.
	8. Work to demanding professional standards with a high level of commitment and drive to provide a high quality scientific service necessary to maintain the Beatson’s reputation as an international centre of excellence. Work is often required to be undertaken outside of normal working hours or on public holidays.
	9. Maintaining an effective service to a high specification in a complex, rapidly-changing clinical environment characterised by competing, changing priorities and timescales.
	10. Respond to a variety of demand led situations in an assured and tactful way to achieve an effective outcome, particularly when patient safety could be compromised and/or when clinical pressures are applied by users to prioritise clinical urgencies
	11. Coping with high workloads and demands for both routine and developing services.
	12. Provision of highly specialist, expert advice affecting cancer treatment, where the risk of error can be significant with consequences having a direct adverse effect on individual or large groups of patients
	13. Maintaining a high quality clinical service that demands continuous innovation and change to keep the Beatson at the forefront of clinical developments.
	14. Manage and motivate scientific and technical staff to produce high quality work in difficult and intellectually demanding fields, and where the clinical consequence of unintended error is significant..
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| **12. KNOWLEDGE, TRAINING AND EXPERIENCE REQUIRED TO DO THE JOB** |
| **ESSENTIAL****Qualifications**A 1st or upper 2nd class honours degree in Physics or allied subject is essential. Possession of a recognised MSc in Medical Physics and a Dip IPEM in Physical Sciences in Medicine or equivalent experience is required. A doctorate or equivalent knowledge is required. State Registered as Clinical Scientist by the Health and Care Professions Council. Certified by RPA2000 as Medical Physics Expert.Knowledge and TrainingStaff at this level require specialist scientific and management skills, knowledge and understanding gained by professional qualifications, training and practical experience. This will encompass:* 1. The theory, operation, function and purpose of a broad range of complex medical equipment listed in Section 5.
	2. A specialised knowledge of radiotherapy equipment and computerised systems, with an in-depth knowledge of relevant legislation, national standards and quality systems.
	3. Highly developed specialist knowledge of techniques in the planning of advanced radiotherapy patient treatments.
	4. A high level of in-depth understanding of patient and staff risks arising from equipment and/or procedural failure, and how these can be minimised.
	5. Policies and practices for managing medical equipment including planned preventive maintenance, inspection, testing, calibration and repair.
	6. Evidence of continuing commitment to Continuing Professional Development (CPD) through private study, and attendance at relevant presentations, courses and scientific meetings, keeping records of continuing professional development activities in order to fulfil the requirements of the Health and Care Professions Council (HCPC) as appropriate.

**Behavioural Competencies**12.7 Evidence in giving presentations at local, national and/or international scientific meetings, or delivering lectures/tutorials to groups of professional health care staff at the appropriate level. 12.8 Effective written and verbal communication, listening and interpersonal skills and time management skills12.9 Evidence of the ability to work unsupervised, use own initiative and participation in a multidisciplinary team of scientists, technical staff, clinicians and/or nursing staff.**Experience*** 1. Significant experience working as a Clinical Scientist in radiotherapy that included a substantial level of responsibility.
	2. Sufficient experience and skills to fulfil the specialist roles of Medical Physics Expert and Clinical Scientist.
	3. Evidence of participation in service development, implementation of new clinical techniques and services and/or research activities, especially in relation to SABR.
	4. Practical experience in operation of a range of highly complex X-ray equipment and imaging equipment and associated instruments for radiation measurement and performance assessment.
	5. Experience of working proactively in close relationship with lead clinicians/practitioners in specialist areas.

**DESIRABLE*** 1. Ability to manage and supervise all groups of staff and flexibility to provide high quality patient care
	2. Knowledge of advanced computing systems, including system administration and management.
	3. Good understanding of risk management processes.
	4. Evidence of innovation or leading in the scientific aspects of new techniques, clinical service improvements and/or clinical trials
	5. Training on staff management/leadership/appraisal/development
	6. Experience in project management and implementation
	7. Eligibility for entry to the Higher Specialist Scientist Register (HSSR).
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Director (Diagnostics Directorate)

Senior Equipment Technologists

Quality Management Representative

Technical Services Manager

Operational Lead (Lanarkshire Beatson)

Dosimetry & Equipment Scientific Lead

(Treatment Delivery)

Scientific Lead (Clinical Planning (including Brachytherapy) & Imaging

Equipment

Technologists

Clinical Director (Specialist Oncology Services)

General Manager (DCPB)

Scientific Director (DCPB)

Head of Radiotherapy Physics

Deputy Head of Radiotherapy Physics

Dosimetrists

Lead Physicist,

Dosimetry

Dosimetry Principal Physicists

Clinical Radiotherapy Systems Manager

Lead Physicist

SABR

Brachy-therapy Principal Physicist

Planning Principal Physicists

**Head of Treatment Planning**

Lead/ Senior Dosimetrists

Head of RT Imaging

Planning Services Manager

Senior Computer Scientists & Information Analyst

Senior Practitioner & Practitioner Physicists

(Pool physicists)