

NHS GREATER GLASGOW & CLYDE

JOB DESCRIPTION

# JOB IDENTIFICATION

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| **Job Title:** | **Nuclear Medicine Section Head – Advanced Specialist Clinical Technologist / Radiographer** |
| **Responsible To:** | **Head of Technical Services** |
| **Department(s):** | **Nuclear Medicine (South & Clyde Sector), Clinical Physics** |
| **Directorate:** | **Diagnostics** |

# JOB PURPOSE

To manage the Clinical Technical services of one of the highly specialist sections of Nuclear Medicine Services, ensuring a high quality diagnostic/therapeutic service within a safe environment for staff and patients, having associated responsibilities for regulatory compliance, efficiency, prioritisation of work and organising the allocation of staff and equipment.

Technologist service lead for advanced specialist clinical procedures.

To contribute to the development and implementation of new procedures & policies and participate in clinical trials/research activities.

To train staff & students to ensure continuity and effectiveness of service delivery.

# ROLE OF DEPARTMENT

Nuclear Medicine in Glasgow is delivered in four separate departments. The departments are supported by a centralised Radioisotope Dispensary which also supports Nuclear Medicine in four other Health Boards in the West of Scotland. PET is supported by an on-site Cyclotron and Radiopharmaceutical production unit. Paediatric Nuclear Medicine in Glasgow is delivered by Radiology at the Royal Hospital for Children on the same campus as the Queen Elizabeth University Hospital.

All the departments provide a wide program of teaching and on-site training to a range of staff groups, including medical staff, and each of them has a programme of ongoing scientific research specific to their area of specialism and participates in the general research work of the hospitals they serve, providing input to a range of clinical trials

This post is offered in the South & Clyde sector.

Nuclear Medicine services are provided at several major hospital sites in South Glasgow. Diagnostic imaging procedures include bone scans for staging in cancer, brain scans for the diagnosis of Parkinson’s disease and heart imaging tests for the diagnosis and management of angina and myocardial infarction. Non-imaging procedures include breast cancer sentinel node mapping and GFR measurements for the investigation of renal function. Bone mineral densitometry measurements are used in the diagnosis and management of osteoporosis. Therapeutic procedures include treatment of thyrotoxicosis (overactive thyroid).

Over 10,000 patient investigations are carried out each year, involving over 40 different procedures. Services in South Glasgow are provided in four sections as follows:

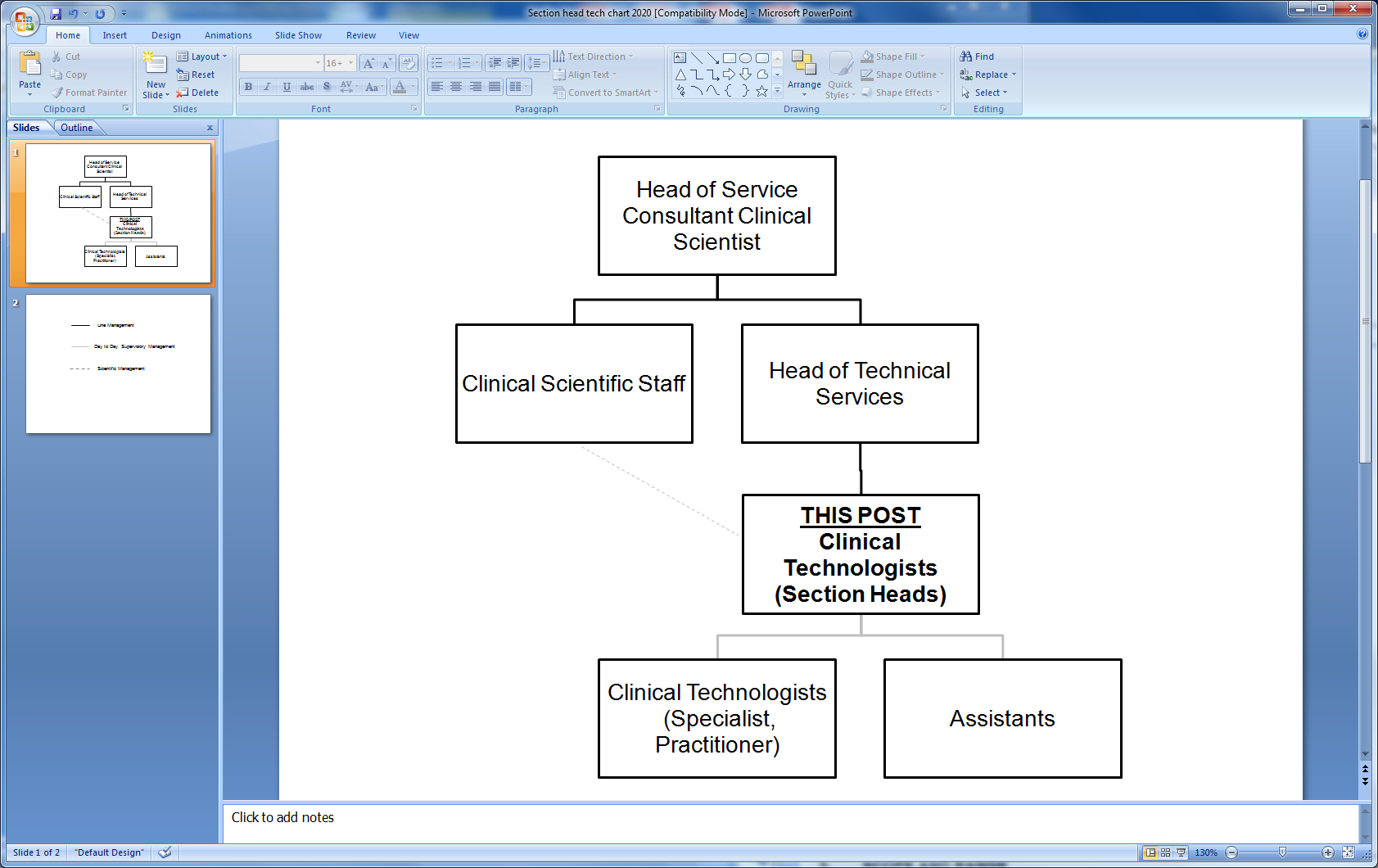
1. SPECT-CT scanner and non-imaging services at the Victoria Hospital
2. SPECT-CT scanner and non-imaging services at the Queen Elizabeth University Hospital (two SPECT-CT scanners, one with diagnostic CT capability).
3. Bone mineral densitometry (DXA), non-imaging and therapy services at the Queen Elizabeth University Hospital
4. Dedicated neuroSPECT services in the Institute of Neurological Sciences

The post holder will be the Section Head Advanced Specialist Clinical **Technologist** for one of these sections.

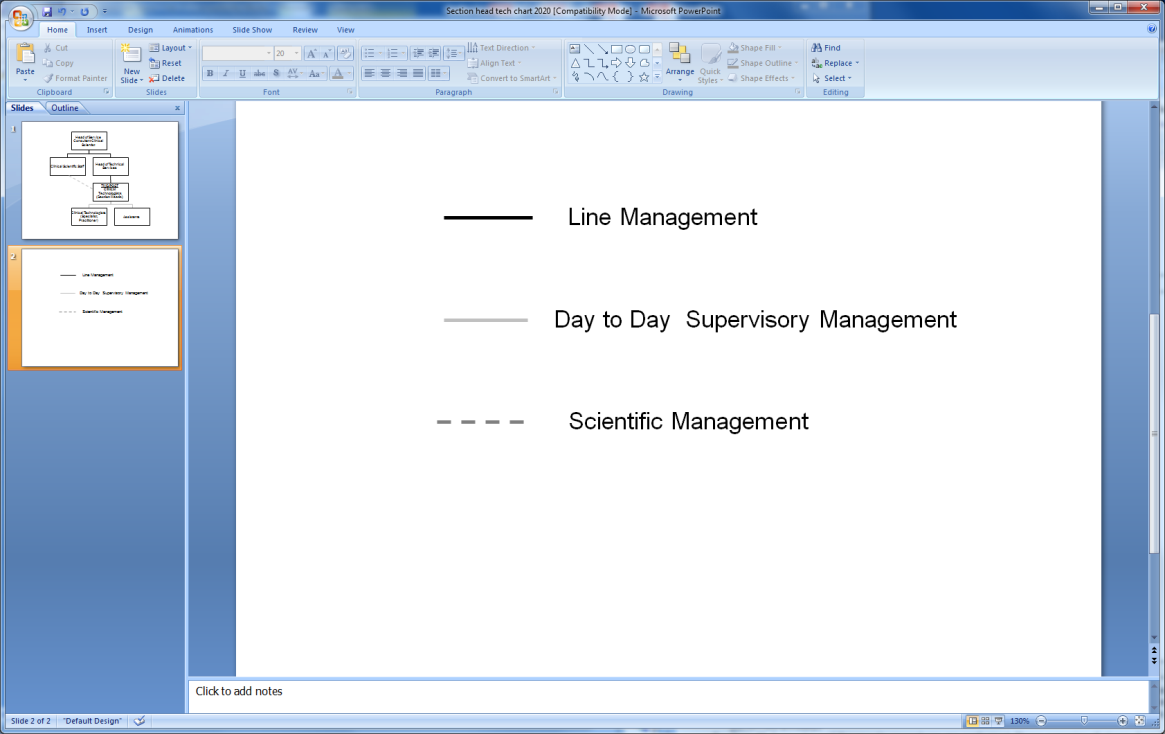
There is also a limited scope of Nuclear Medicine non-imaging services provided in Clyde (Royal Alexandra Hospital & Inverclyde Royal Hospital). The Section Head Advanced Specialist Clinical **Technologists will provide support to Clyde** Nuclear Medicine **services.**

Post holders will provide out-of-hours cover for emergency or delayed patients when necessary.

# Organisational Position



**This Post**



# SCOPE AND RANGE

1. Nuclear Medicine services are provided at three hospital sites in South Glasgow (Queen Elizabeth University Hospital (QEUH), Victoria Hospital (VH) and the Institute of Neurological Sciences (INS) (involving eighteen staff (scientific, technical, assistant, A&C) with approx. 12,000 patient procedures performed annually).
2. Over 40 diagnostic and therapeutic procedures are performed. These comprise all stages from the point of referral through to the interpretation of procedures (imaging & non-imaging) and reporting.  
   Diagnostic procedures include bone scans for staging in cancer, brain scans for the diagnosis of Parkinson’s disease, heart imaging tests for the diagnosis and management of angina and myocardial infarction, GFR tests for the investigation of renal function and bone mineral densitometry measurements used in the diagnosis & management of osteoporosis. Therapeutic procedures include treatment of thyrotoxicosis (overactive thyroid).
3. Highly specialist imaging, scientific and computer equipment is used and facilities include:
   * SPECT-CT scanners (including diagnostic CT functionality) and non-imaging facilities.
   * Radionuclide therapy and blood labelling facilities
   * Dual-energy bone densitometry (DEXA)
   * Gamma and beta counters
   * Dedicated NeuroSPECT scanner
4. Nuclear Medicine Services are provided to the South Glasgow & Clyde catchment area. Some diagnostic tests are provided as direct-referral procedures to General Practitioners. NeuroSPECT serves clinicians throughout the West of Scotland, with some patients referred nationally.
5. Research and development projects are undertaken with other hospital staff groups (e.g. consultant medical doctors), academic institutions (e.g. Glasgow University) and commercial organisations.
6. A limited scope of Nuclear Medicine non-imaging services are provided in Clyde (Royal Alexandra Hospital & Inverclyde Royal Hospital), with approx. 300 patients annually. These comprise breast cancer sentinel node mapping and the treatment of thyrotoxicosis (overactive thyroid).

# MAIN DUTIES/RESPONSIBILITIES

**Management**

1. Responsible on a day-to-day basis for managing of the operation of a section providing highly specialist Clinical Technical services, ensuring that the highest professional and clinical standards are met.
2. Plan, prioritise and schedule the workload of the section and respond to requests for unplanned or urgent cases effectively. Includes responsibility for matching equipment availability to match the workload.
3. Responsible for allocating work to staff within the section, ensuring quality of work and facilitating effective communications.
4. Ensure the work of the section is performed in compliance with all relevant statutory requirements, NHS GGC Divisional policies and departmental procedures with respect to clinical practice and safety, including Ionising Regulations (Medical Exposure) Regulation (IRMER) 2017, Ionising Radiations Regulations (IRR) 2017, Environment Authorisations (Scotland) Regulations (EA(S)R) 2018, Infection Control, Clinical Governance, Health & Safety etc.
5. Contribute to the South Glasgow Nuclear Medicine Technologist management team as a participating member.
6. Contribute to the process of developing changes to operational procedures
7. Participates in the recruitment and selection process for Technologists, Assistants and A&C staff e.g. member of interview panel.
8. Has responsibilities for resource management, ordering of consumables and contributing to the effective, efficient and economical use of available resources (both human and commodities).
9. Ensure the safe and efficient use of expensive and complex technical equipment. The total capital cost of the equipment is over £2M.
10. Has responsibilities for ordering radiopharmaceuticals (up to tens of £k per month) at the specified reference time to match patients scan times, incorporating radioactive decay considerations.
11. Coordinate section’s equipment maintenance, quality assurance tests and reporting of equipment faults in accordance with statutory requirements, departmental policies and manufacturer’s guidelines.
12. Have responsibilities for the formulation and review of the technical aspects of written protocols and standard operating procedures for the section and sector.
13. Contribute to the development of departmental procedures.
14. Contribute to the development of departmental policies by participating in multi-disciplinary service review meetings, taking appropriate follow-up action.
15. Assist in the assessment of major items of imaging and non-imaging equipment, as part of a pre-purchase appraisal process.
16. Oversee the housekeeping tasks for the section’s computing systems (e.g. system backups, archiving of patient data).
17. Contribute to audits for regulatory compliance and inspections by regulatory bodies e.g. Scottish Environmental Protection Agency (SEPA), Health & Safety Executive (HSE), Healthcare Improvement Scotland (HIS) etc.
18. Ensure that routine section management roles are performed, such as maintenance of equipment downtime records, Health & Safety checklists.
19. Liaise with imaging equipment manufacturers or agents as required e.g. servicing, breakdown.
20. Perform leadership roles for South Glasgow Nuclear Medicine sections, such as fire champion, dementia champion, safety roles e.g. COSHH and risk assessments (H&S, Ionising Radiations Regulations (IRR) 2017).
21. Exercise personal responsibility and make decisions in complex and difficult circumstances particularly during clinical investigations, recognising the need to seek appropriate advice where necessary.

**Clinical/Technical**

* 1. Act as Head Technologist for a section, leading the provision of highly specialist Clinical Technical services.
  2. Responsible for creating an appropriate timetable for the scheduling of tests for the section and ensuring that all preparations necessary for their conduct are made and all necessary supplies are ordered.
  3. Prioritise and plan the workload of the section, taking account of the severity of the patient’s condition and the direct impact on their management. Assessment will take account of physical, mental and emotional factors and impacts on the imaging technique used.
  4. Participate in the clinical workload for the designated section, by performing a wide range of procedures using specialised imaging or similar equipment (over 40 in total). Specialised equipment includes: SPECT-CT scanner, DXA machine, NeuroSPECT system, blood labelling equipment, MPI stressing equipment.
  5. Participate in a limited scope of work to facilitate support for essential clinical services in other suitable section(s) as appropriate.
  6. Care for the needs and welfare of every patient attending the service.
  7. Maintains good relationships and an empathic approach to patients, carers and relatives and refer them to the appropriate person for any questions, suggestions or complaints.
  8. Be acutely aware of clinical problems that can occur during these highly specialised tests and use keen observational skills to monitor the patient closely for any verbal or non-verbal signs of distress or symptoms. Responsible for calling for medical or nursing help should a patient’s condition deteriorate.
  9. Independently, authorises requests for Nuclear Medicine procedures as part of the Ionising Regulations (Medical Exposure) Regulation (IRMER) 2017 (this is required to ensure that patients are not inappropriately exposed to ionising radiation).
  10. Independently, authorises Carers & Comforter exposures to ionising radiations for Nuclear Medicine procedures as part of the Ionising Regulations (Medical Exposure) Regulation (IRMER) 2017 (this is required to ensure that relatives & carers of patients are not inappropriately exposed to ionising radiation).
  11. Performs all of the imaging and associated procedures required to deliver the Nuclear Medicine service including general imaging and radionuclide sample counting with associated quantitative calculations.
  12. Operates a range of highly complex technical equipment including SPECT/CT scanners, neuroSPECT scanner and their associated computing systems, a range of systems for counting patient samples and a variety of radiation detectors.
  13. Provides input into the creation of new protocols for routine procedures being implemented for the first time.
  14. Contact and collaborate with the referring doctors or research personnel to ensure correctly completed referrals for the study.
  15. Participate in the planning and scheduling of all tests, utilising a sound knowledge of the timing, constraints and processes involved for the diverse range of tests.
  16. Ensure that all preparations necessary for the conduct of each test are made and all necessary consumables and the correct pharmaceuticals are ordered.
  17. Receive the patient into the department and provide a full explanation of the procedures being proposed and answer any questions posed, taking the utmost care to respect the patient’s fears, wishes and privacy. Ensure that the patient is not taking any medication contra-indicated for the test.
  18. Verifies the pregnancy status of patients prior to radiopharmaceutical administration. This can involve performing pregnancy tests and assessing results.
  19. Orders radiopharmaceuticals taking care that delivery times are specified to match patients scans times incorporating radioactive decay considerations. As these can cost several hundred pounds per patient dose, the minimisation of waste is important.
  20. Prepares radioactive materials for administration including the calculation of the correct levels of administered activity taking into account corrections for radioactive decay and physiological condition (e.g. pregnancy, pulmonary hypertension, weight and age).
  21. Ensures that patients are properly prepared for their procedure, this may involve the administration of pharmaceuticals.
  22. Ensures patients are properly identified before administering radioactive materials.
  23. Administer radioactive pharmaceuticals to patients (orally / intradermally / intravenous injection). This includes all routine investigations as well as research and clinical trial work.
  24. Manoeuvre the patient into the scanning positions and perform procedures in accordance with departmental standard operating procedures.
  25. Perform CT imaging procedures as part of a SPECT-CT imaging protocol.
  26. Carry out bone mineral densitometry procedures (DEXA).
  27. Reviews the results of imaging procedures and decides if additional views need to be acquired to obtain the required diagnostic information.
  28. Provides a professional opinion to clinicians on the technical nature of a diagnostic result when requested.
  29. Undertake aftercare of patients following administration of radioactive materials and maintain awareness of possible adverse reactions. Provide reassurance and information and explain follow-up procedures to patients where necessary.
  30. Acts as an Operator under the IRMER 2017 Regulations.
  31. Performs quantitative analyses of acquired clinical images or sample results. Addresses unusual aspects or potentially erroneous results, or escalates as required.
  32. Oversees procedures within the section required for the department’s quality control programmes (testing scanner uniformity, phantom studies, radionuclide calibrator checks etc.).
  33. Helps patients onto and off of the scanning beds with various manual handling aids.
  34. Liaises with portering, ambulance staff etc. to ensure patients are transferred to the department in time for their scan.
  35. Prepare, analyse and present the results for reporting. Analysis includes judgement of the optimum shape and position of computer-generated regions placed around anatomical structures and inspection of interim and final results for validity.
  36. Perform all laboratory work associated with imaging and non-imaging investigations e.g. pipetting, use of a centrifuge, making up standards and working with very small volume samples in an accurate and reproducible manner to allow quantitative measures to be made.
  37. Participates in the planning for and practical implementation of clinical trials and research & development activities.
  38. Contribute to research and clinical trials, ensuring trial protocols are developed and followed and Case Report Forms are completed correctly.
  39. Provides input into the creation of new protocols for routine procedures being implemented for the first time.
  40. Assists with the maintenance of the department’s standard operating procedures.
  41. Maintain high standards of practice to ensure good quality diagnostic information is produced.
  42. Identify and report equipment faults, image artefacts and calibration errors.
  43. Operate a range of ionising radiation monitoring devices.
  44. Ensures all scans are adequate for clinical use prior to the patient leaving the department.
  45. Assists with the pre-purchase appraisal of major items of imaging and other equipment.
  46. Participates in multidisciplinary meetings (monthly), taking appropriate follow-up action to improve procedures.
  47. Follows the standard operating procedures at all times.
  48. Work out-of-hours when required to cover emergency or delayed patients.

Perform some of the following advanced roles, dependent on the section and roles:

* 1. Act as the lead cardiac stressor taking responsibility for cardiac stress procedures for MPI Imaging using pharmacological stressing. This includes:
     1. Assess patient’s suitability for procedure utilising specialist clinical skills such as ECG interpretation, clinical history taking and assessment re contraindications including medication.
     2. Throughout the cardiac stressing procedure, continually monitor the patient’s general condition, vital signs and mobility, stopping the procedure as required
     3. Maintain ILS (Intermediate life support)
  2. Lead technologist for the highly specialist NeuroSPECT services provided for the regional Institute of Neurological Sciences. This includes the epilepsy surgery SPECT service, with patients referred nationally. The post holder has responsibilities for managing ictal SPECT procedures and associated training of ward staff. This is a highly specialist procedure involving patients who have epilepsy medications withdrawn / are sleep deprived to promote seizures. Appropriate provision and security of the radiopharmaceutical for rapid administration during a seizure in a ward environment is also required.
  3. Service lead for dementia, including working with patients with dementia and their families and carers. Also identification and provision of staff education. A large number of patients with diagnosed or suspected dementia are referred to the NeuroSPECT service for imaging procedures for the differential diagnosis between types of dementia.
  4. Lead technologist for the Bone Mineral Densitometry (DXA) services, liaising with Consultant Medical and Nurse Specialist colleagues providing bone mineral-metabolism and fracture liaison services, for the optimisation of service provision. This includes being a contributing member of the multi-disciplinary Sector Osteoporosis service team.
  5. Responsibilities for consignment of radioactive waste to a specialist contractor for all the adult nuclear medicine sections on the hospital site in compliance with Environment Authorisations (Scotland) Regulations (2018), as per standard operating procedures and maintenance of records thereof.
  6. Responsible for the operation of the CT scanners in the section, including diagnostic quality CT imaging.
  7. Service lead for blood labelling procedures in a dedicated labelling cabinet in an appropriate clean environment, with subsequent re-administration of the radioactive labelled blood cells to the patient for imaging / non-imaging procedures. Aseptic procedures are required in addition to minimising risk to staff and patients of blood borne viruses.
  8. Technologist service lead for radionuclide therapy procedures. These procedures are restricted to scientific staff and specific senior technologists and needs a high degree of responsibility and knowledge. This task requires the post holder to assess the clinical condition of the patient and decide whether the therapy can go ahead. The post holder must explain the highly complex post therapy precautions which the patient must take (this is required by IRR 17 regulations to ensure that radiation doses to members of the public are kept below the allowed limit). Radiation exposures to Carers and Comforters of the patient must also be planned for and managed (this is required to ensure that relatives & carers are not inappropriately exposed to ionising radiation as per IRMER 17 Regulations). The post holders must do this in the environment where there is significant patient and patient relative apprehension. In addition, post-holders have to ask very personal questions and discuss patient behaviour appropriately

## Health and Safety, Radiological Protection & Governance

1. Ensure that on a day to day basis technical, assistant and clerical staff comply with safe systems of work and maintain a safe working environment for staff and patients.
2. Ensure that high standards of technical practice are maintained in the section to ensure radioactive materials are handled safely.
3. Key role in development of systems of work to ensure patient and staff safety within the department and creating a suitable culture.
4. Oversees routine radioactive contamination monitoring within the section using contamination monitors and wipe tests, including remedial action as appropriate and updating records accordingly.
5. Ensures that on a day to day basis the records relating to the receipt, administration and disposal of radiopharmaceuticals in compliance with the directives of the Environment Authorisations (Scotland) Regulations (EA(S)R 2018).
6. Responsibility for overseeing the safe handling of radioactive materials within the section in accordance with the Local Rules and the Standard Operating Procedures (to comply with the relevant legislation (IRMER, IRR, EA(S)R etc).
7. Oversees procedures within the section for the disposal of all radioactive and clinical waste according to local procedures, ensuring that all regulatory requirements are met (IRR 17, EA(S)R 18 etc), and otherwise maintain a clean and safe working environment for patients and staff.
8. Coordinate any section’s requirements for the transport radioactive materials to other sites re packaging and despatching in compliance with the Carriage of Dangerous Goods and use of Transportable Pressure Equipment Regulations (2009), as per standard operating procedures and maintenance of records thereof.
9. Acts as first point of contact in dealing with incidents involving radioactive materials (spillages, urinary incontinence etc.) in a manner that complies with the Ionising Radiation Regulations 2017 and follows Standard Operating Procedures.
10. Coordinates the reporting of incidents (including radioactive materials) occurring within the section on the DATIX system and contributes to subsequent investigations and learning.
11. Be present as required during visits from any of Her Majesty’s Inspectors and other crucial inspectors [Health and Safety Executive (IRR 17 Regs), Scottish Environment Protection Agency (EA(S)R 18 Regs), Healthcare Improvement Scotland (IRMER 17 Regs)].
12. Oversees emergency stop checks on scanners.
13. Works with the Sector Lead Technologist to ensure that additional responsibilities are covered within the sector e.g. act as Cleanliness Champion, contribute to the Health Board's Major Incident/Radiation Incident Response team at Emergency Departments across the Health Board area.
14. Works to high standards of cleanliness and infection control
15. Ensure patient records and confidentiality are maintained in accordance with Hospital policies and statutory regulations including Data Protection and Caldicott Guidelines.
16. Ensure that records for the section are maintained and that all statistical information, equipment information and staff training information relating to the department are documented appropriately.
17. Contribute to departmental audit and quality assurance programmes which may lead to changes in current working practises while maintaining effective Clinical Governance.
18. Take a lead role in the development of risk assessments as required for the section and sector.

**Training / Educational**

1. Provide and coordinate the training of staff for roles within the section, taking a lead role in the development of the training provided.
2. Assist the Sector Lead Technologist with delivering the IPEM Diploma in Clinical Technology (Nuclear Medicine) training program & in-house training programs for all Technologist/Radiographer and Assistant staff.
3. Act as a trainee supervisor for the IPEM Diploma in Clinical Technology (Nuclear Medicine) training program as required.
4. Undertake external training courses and provide cascade training to local staff as required (for example Royal Osteoporosis Society National Training Scheme for Bone Density Operators).
5. Provide and coordinate training needs for research and development projects within the section as required.
6. Responsibilities for the co-ordination and provision of technical training of other staff groups while they are in the department. This includes junior physicists as part of the national training scheme, radiographers and technologists as part of their BSc courses and junior Radiologists as part of their Specialist Registrar training. Training is also provided to other medical staff, nurses and medical students as required.
7. Present training, educational & project work to larger groups of people e.g. CPD sessions, conference presentations, written reports.
8. Attends relevant meetings and conferences and presents information gained to other staff in the department.
9. Participates in personal career development planning to maintain skills and develop personal growth through training and education as agreed with line manager.
10. Responsibilities for the management of personal career development and provision of CPD activities for staff within the section and department.
11. Participate in mandatory training keeping an up to date personal record.
12. Maintain knowledge of technological advances in the methods used within the service, including involvement in meetings.
13. Be prepared to act as IPEM moderator for the IPEM Technologist training program as required.

# SYSTEMS AND EQUIPMENT

The post holder must be highly proficient in the use of a range of highly complex imaging, computing and radiation detection and counting equipment. The post holder must also be proficient in the use of complex image analysis software for the production of quantitative data from clinical studies. The use of laboratory equipment such as laminar flow cabinets is also required to support complex procedures such as the labelling of white cells prior to reinjection into a patient. Other IT systems are also used on a daily basis to appoint patients, schedule workload and perform statistical analyses.

1. Radionuclide Imaging Systems (SPECT-CT, neuroSPECT) with associated image analysis workstations
2. Bone Mineral Densitometry (DXA) system
3. Tomographic and cardiac gating systems.
4. Radionuclide calibrator – measures activity of radiopharmaceuticals
5. Technegas generator for production of radioactive gas for ventilation imaging.
6. Beta and gamma counters for accurate analysis of radioactive blood and urine samples.
7. Radiation monitors, various
8. Dose rate meters
9. Protective equipment e.g. lead shielding and syringe shields.
10. Laminar flow cabinets
11. Centrifuge
12. Various items of laboratory equipment (automatic pipettes etc.)
13. Short and long-lived test radioactive sources for quality assurance procedures
14. Defibrillator
15. Blood glucose analyser
16. Blood Pressure Monitors
17. SPO2 Monitors
18. Oxygen Cylinders
19. Patient manual handling aids including hoists
20. Radiology Information System
21. Picture Archiving and Communications System (PACS)
22. Patient administration system
23. PECOS supplies system
24. Numerous PCs with Microsoft Office
25. The internet, intranet and e-library

# DECISIONS AND JUDGEMENTS

Workload is generated by the incoming requests for patient investigations or therapies from approved medical referrers.

The post holder must provide leadership and supervision to Nuclear Medicine Technologists, Assistants and A&C staff contributing to the work of the section. The post holder is not directly supervised and must demonstrate initiative and sound judgement in making decisions.

The post holder must provide leadership and supervision to trainees and students, including providing training and undertaking assessment of their competency, knowledge and skills.

The post holder is responsible for scheduling the workload and planning the workflow within the section, prioritising work and use of resources to ensure optimal use of both staff and equipment. Often the post holder has to exercise initiative to ensure scheduling and other conflicts are resolved, adapting to changing circumstances and re-plan the work of the section, especially when dealing with urgent / emergency procedures.

The post holder must also:

* Be accountable for their own professional actions.
* Make judgements as to the technical performance of the Gamma cameras, SPECT-CT and other equipment and take appropriate action, seeking advice from scientific staff as required.  This includes deciding on the necessity to call out equipment Engineers, who come from out with the hospital and may require to travel from a long distance
* Interpret images and data for unexpected results and then identify the causes seeking advice from scientific staff as required.  The post holder has overall technical responsibility for all images and data submitted for reporting and has to make judgements, investigate and resolve complex quality issues.
* Balances the requirement for emergency studies with those of scheduled procedures.
* Patients who are particularly ill are often unable to comply fully with the requirements of any particular procedure. A judgement often has to be made that balances the clinical information obtainable against what the patient is safely able to do. The post holder utilises their skills and experience to assess the patient’s condition and decide on the most appropriate technique to obtain a diagnostic image.
* Make an informed judgement on whether an investigation should be terminated if the patient’s condition changes at any time or whether the patient requires medical advice before leaving the department.
* Judges when external medical help is required to deal with a patient whose condition has deteriorated.
* Decide on best way to undertake imaging of difficult patients including weighing up risks to staff undertaking high risk procedures from high risk patients e.g. HIV, Hep C+. Organising daily workload to minimise infection risk with e.g. MRSA patients
* Exercises judgement about the level of information the patient can be given.
* Recognises abnormalities on images to make decisions on whether further imaging should be considered, by the post holder or by clinical colleagues.
* Make an informed judgement as to patient’s suitability for highly specialised MPI cardiac stressing using pharmacological or exercise techniques. Continue to monitor the patient’s vital signs & ECG during this high risk procedure and terminate as required.
* The quantitative analysis of the images can often be problematical and skill, experience and judgement are required to produce meaningful and accurate clinical information.
* When acting in the role of operator, under the Ionising Radiation (Medical Exposure) Regulations, decide whether requests for radiation exposure can be authorised according to protocol.
* When acting in the role of operator, under the Ionising Radiation (Medical Exposure) Regulations, decide whether radiation exposures to patient’s Carers & Comforters can be authorised according to protocol.
* Contribute to decisions made by the Nuclear Medicine management team e.g. when selecting, procuring, evaluating and implementing very expensive new equipment.
* Represent the service and thus contribute to decisions and judgements made at departmental / sector wide working groups and committees.
* Participate in the selection and recruitment of staff
* Participates in discussions regarding the overall operation of the service
* Be able to respond rapidly and take control of any incident involving a spill of radioactive material.
* Make an informed judgement as to patient’s suitability for high activity radionuclide therapy, with associated radiation risks.
* On a daily basis, predict and plan the usage of expensive radiopharmaceuticals (several £k per month) to match patient schedules and be able to respond to requests for emergency investigations while minimising the wastage caused by the rapid decay (a few hours) of radiopharmaceuticals.

# COMMUNICATIONS AND RELATIONSHIPS

The post-holder is required to communicate on a daily basis with patients; their relatives; their carers; the multidisciplinary Nuclear Medicine team; referring clinicians; ward nursing staff involved in the provision of patient care; and external agencies such as GP practices. Communication is face-to-face, by phone, by email and occasionally by letter. The post holder has to be aware of the sensitive nature and confidentiality of topics discussed and use tact and diplomacy. Occasionally the post-holder will also be required to present complex information to large numbers of staff, such as large training events or presentations at international conferences.

## Staff

* Ensure good communication and effective team working between staff in the section.
* Contributes to departmental management discussions and decision making process.
* Facilitates changes in working practices by providing expert advice and by supporting and motivating staff. Listens to concerns/issues and negotiates acceptable solutions.
* Resolves conflicts between staff within the section and with staff from other sections or departments, using tact and diplomacy
* Allocating work and providing advice to Technologists, Assistants and clerical staff.
* Consults physicists for advice.

## Patients

* Provide information by explanation of the complex and often lengthy procedures, listening to and acting upon the patient’s physical and emotional requirements in order to encourage compliance with the procedure. Some patients will have difficulty in understanding the process or be unable to communicate e.g. those with learning difficulties, dementia, or who are non-English speaking.
* Use developed motivational and persuasive skills to produce an acceptable diagnostic image in patients who have reduced mobility due to injuries or illness. These patients may have severely challenging behaviour that may make them obstructive or physically aggressive. They could also be uncooperative or violent if under the influence of drugs or alcohol.
* Provide reassurance as to the benefits of a procedure involving radiopharmaceutical administration to overcome the fears associated with ionising radiation. This can involve the communication of complex concepts involving the levels of risk associated with ionising radiation.
* Provide advice on radiation protection issues that may be required following the procedures.
* Deal with patient complaints according to hospital policies.
* Dealing with anxious patients e.g. cancer patient and/or patients with a terminal illness
* Communicating with patients receiving therapy and the associated anxiety and complex post therapy behaviour they must adopt.
* Communicating with patients undergoing cardiac stressing or other pharmacological intervention and the associated anxiety.

## Relatives/Carers

* Provide reassurance, give and receive information, using tact and diplomacy and mindful of the regulations governing personal information.
* Ask for assistance with, and instruct in methods of immobilisation while maintaining radiation protection.
* Explain complex advice regarding radiation protection to staff, patients, relatives and carers following the therapeutic administrations of radioactive materials. The procedure being performed and advice being communicated often results in staff, patients, relatives and carers being in an anxious state.

## Medical Staff/Nursing Staff/Healthcare Staff

* Coordinate test procedures with other departments to provide a streamlined patient service.
* Seek advice from consultant radiologists/physicians and other ARSAC licence holders.
* Provide advice on patient preparation for investigations.
* Provide advice on radiation protection issues prior to and following investigations.
* Provide training to students and other healthcare professionals coming into contact with the specialist work of Nuclear Medicine.
* Communicate with Consultant Radiologists/Physicians, ward nursing or medical staff regarding patient’s clinical care needs.
* Provide advice on guidelines for relevant examinations.
* Seek help and advice with patients in pain or immobile.
* Make clear and professional presentations to other groups of staff at local, regional and national meetings.
* Query incorrect or unnecessary referrals in order to reduce or avoid unnecessary radiation dose.
* Post holder is often asked to provide data and advice to the clinical staff within the department, this may be technical or statistical in nature.
* Contact and work with Clinical Physics (Electro-Medical Equipment Services) staff to resolve problems with equipment.

## External

* Liaise with Radioisotope Dispensary and other suppliers of radiopharmaceuticals to ensure cost-effective supply with minimal waste.
* Liaise with ambulance control.
* Liaise with external servicing organisations to minimise downtime of equipment.
* Liaise with external education providers re training e.g. Universities.
* Participate in national professional roles such as IPEM training moderator as required
* Present technical work to various groups including at professional meetings.

# PHYSICAL DEMANDS OF THE JOB

## Physical Skills:

The post requires highly developed physical skills where a high degree of precision or speed and high levels of hand, eye and sensory co-ordination are essential, such as:

* Be able to work with the utmost care and at speed using dexterity and precision to prepare and dispense large activities of radioactive materials, pipette blood samples and perform cell labelling. Speed is required to minimise radiation doses to staff and self. Precision is required to ensure accurate dispensing of radiopharmaceuticals for patient use.
* Be trained and proficient at administering intravenous and intradermal injections of radiopharmaceuticals, often in restricted positions (e.g. patient is beneath camera and access is difficult).
* Use a high degree of manual skills to manipulate and position all patients providing immobilisation when required.
* Have the expertise to safely handle and operate highly specialised, expensive and heavy imaging equipment.
* Possess manual dexterity and keyboard skills for speed and accuracy of data entry to maintain the integrity of all computerised databases and systems.

## Physical Demands:

There is a requirement to exert moderate and intense physical effort for short periods during a shift, such as:

* Pushing/pulling and accurately positioning heavy collimator trolleys weighing in excess of 100 kg, with no mechanical aids.
* Move patients with use of a pat slide.
* Push trolleys, wheelchairs.
* Move and manoeuvre patients with use of mechanical aids.
* Lifting and accurately positioning test objects weighing six to 15kg.
* Standing/walking for much of each shift.
* Standing for long periods of time (e.g. when blood labelling).
* Sitting in a restricted position (e.g. computer based work) for a proportion of each shift.

## Mental Demands:

There is a frequent requirement for concentration where the work pattern is unpredictable, and an occasional requirement for periods of prolonged concentration, such as:

* Concentration required when checking patient documentation prior to administration of radiopharmaceutical to patient, including patient identity check prior to administration.
* Concentration required during observation of patient behaviour which may be unpredictable.
* Observation of potential contamination incidence.
* Concentration required when authorising investigations under IRMER.
* Concentration required when blood cell labelling.
* The post holder is interrupted frequently during each working day to decide on appropriate imaging or times of patient bookings – this requires the post holder changing tasks and constantly reprioritising work for themselves and others in the team.

## Emotional Demands:

Occasional exposure to distressing or emotional circumstances and occasional exposure to highly distressing or highly emotional circumstances, such as:

* Communicating with anxious/worried patients/relatives (daily)
* Imaging for the terminally ill (daily)
* Communication with patients unsure of diagnosis (daily)
* Imaging for patients following receipt of bad news (daily, and occasionally immediately following news).
* Dealing with patients with severely challenging behaviour (approx 1/month)
* Dealing with patients waiting for extended periods. The department is often very busy and the post-holder must be capable of working effectively when under pressure. (daily)
* Concentration and collaboration to ensure smooth patient throughput.
* Dealing with staffing issues and allocation of tasks and roles.

## Working Conditions:

Frequent exposure to unpleasant working conditions, and occasional exposure to highly unpleasant working conditions, such as:

* Exposure to body fluids, faeces, emptying bed pans/urinals, catheter bags (daily).
* Potential for prolonged exposure to blood especially when blood labelling.
* Exposure to radioisotopes (daily and includes urinals etc. with radioactive urine).
* Exposure to verbal aggression (occasionally).
* Exposure to physically aggressive behaviour (rare).
* Dealing with high risk patients e.g. IVDA, Hep B, C, HIV and Strep etc.
* Risk of needlestick injuries.

# MOST CHALLENGING/DIFFICULT PARTS OF THE JOB

The specialty of Nuclear Medicine involves over 40 different diagnostic imaging, non-imaging and therapeutic techniques utilising 20 different short and long-lived radiopharmaceuticals with highly variable timing between the patient’s arrival and the procedure itself (which depends on how quickly the radiopharmaceutical accumulates in the target organ). Not only are the technical demands of this post substantial but scheduling this workload is an exercise in meticulous planning both prior to and on the day of the investigations. The difficulties are compounded on an almost daily basis as any delay due to late arrival of patients or change in a patient’s scanning procedure has a knock-on effect on all other procedures scheduled for that day. In addition, there are different approaches that can be tailored to the particular conditions of individual patients – it is much more complex that just taking an x-ray, for example. All of this must be carried out while working under pressure to maintain throughput and often while supervising staff and / or trainees.

Balancing the staffing levels to the workload of the section on a day-to-day basis is challenging. An advanced understanding of the work being performed is required. Good communication, organisational and leadership skills are required to make this work in practice.

The department is busy and the post holder has to be able to manage difficult and stressful situations in which sick patients need attention, urgent scans need to be performed at short notice, medical staff need reports produced quickly etc. The post holder also has to assist with the organisation of staff in these situations.

High levels of experience are required to balance the requirement for providing a scheduled service for patients with that of being able to respond, often at very short notice, to the need to perform an urgent/emergency procedure.

The post holder is responsible for managing a number of members of different staff professions (e.g. Technologist, Radiographer, Assistant, A&C) and for ensuring that the section is run efficiently, economically and professionally. This includes leadership skills, responsibilities for training and the development of staff & services, contributing to recruitment and motivating staff. The responsibility for effective operation of the staff has a large impact on the service and impinges upon the number of studies performed successfully each year.

The technologist must also be able to deal with the fear of radioactivity expressed by patients and other staff as well as the very real danger posed by unsealed radioactive substances. In addition, all procedures are carried out in a typical clinical environment where patients are anxious, distressed and in many cases seriously ill and with a poor prognosis

Leading and motivating staff while under personal pressure.

Training of staff and contributing to recruitment has a large impact on the effectiveness of the service and impinges upon service delivery.

Radiation protection advice to staff including first line response to dealing with spills of radioactive materials.

The daily operation of highly complex imaging equipment and computing systems requires high levels of concentration, knowledge and experience.

Regularly performs advanced Nuclear Medicine procedures requiring high levels of skill, training and expertise.

Working safely with radioactive materials and ensuring that the wide range and complex nature of the requirements associated with the legislation governing the handling of radioactive materials are followed on a daily basis is a challenge. Note that significant failures can lead to prosecution.

# KNOWLEDGE, TRAINING AND EXPERIENCE REQUIRED TO DO THE JOB

See separate Personal Specification document.