

# **Advanced Performance and Responsibility Guidelines for the Nuclear Medicine Technologist.**

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# **Advanced Performance and Responsibility Guidelines for the Nuclear Medicine Technologist.**

## **Introduction**

In 1998 the EANM Technologist Committee published a document that described the basic duties of a newly trained Nuclear Medicine Technologist, setting standards on the performance of a wide range of tasks that may be carried out by this staff group in different departments. This skills profile was called “Competencies for the Nuclear Medicine Technologist” and was modified from work of the BNMS Technology Group. This document has since been widely distributed and many favourable comments were received about its content. Indeed several countries have adopted it to underpin their education and training for technologists. This document is now available for download on the EANM website ([www.eanm.org](http://www.eanm.org)) and is sent to all new Technologist members of the EANM.

However it was only the start. Over the last three years we have been working on an idea for “Advanced Competencies” and over the last twelve months this has come to fruition in this new document “**Advanced Performance and Responsibility Guidelines for the Nuclear Medicine Technologist**”.

The Technologist Committee felt that it was important to publish guidance on the duties that would be carried out by a more senior technologist, or the Chief Technologist. We wanted to set out good practice, while recognising that there is a wide variation in the way Nuclear Medicine departments are organised and how the hospital infrastructure supports “management” tasks within the department.

For example, with reference to the section on Management Topics, in some hospitals all Human Resources functions (including monitoring staff sickness and even disciplinary matters) are carried out by a Human Resources department. In others, these tasks are carried out “in house” by the Chief Technologist or another manager, perhaps with support from the HR department. In either case, the manager must follow good practice and adhere to policies, so we felt that we could still offer guidance that would not conflict with the hospital’s own rules.

The other areas these Guidelines cover are Information Management, Management of Quality Assurance and Quality Control, Specialisation, Radiation Protection in the Nuclear Medicine Department, Research and Development, Training and Education. These are all areas through which the technologist may progress to senior (or Chief) status within a nuclear medicine department and in each case we have tried to give guidance on best practice. The section on Radiation Protection is based on specific European directives as well as setting out good practice. This may be modified by national law but the underlying principles and the Directives remain in force.

This document will be made available for download via the EANM website. This will make it easier to update in future and I hope it will be a “living document” with regular revision to reflect the needs of the technologists who will use it.

Development of this document has been a collaborative effort between the members of a team of ten people, comprising the EANM Technologist Committee and Education Subcommittee. We are particularly indebted to Wim van den Broek for his work in editing the document and to Sue Huggett for her careful checking of grammatical accuracy. We hope it reads well and that technologist will find it useful and interesting.

**Cedric Eustance, Chairman EANM Technologist Committee 1998-2001**

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Comments on this document and suggestions for revision or improvement should be directed to the EANM Technologist Committee, via the contact details on the EANM website. When quoting from this document or using material for any purpose, we would be grateful if the source could be fully acknowledged.

# Advanced Performance and Responsibility Guidelines for the Nuclear Medicine Technologist.

## Chapter 1: Management Topics

- ❖ *Managing staff and resources to a high standard, to ensure efficient and safe operation of the nuclear medicine service.*
- ❖ *Providing a good working environment for building an integrated, effective team.*
- ❖ *Keeping the needs and welfare of patients as the focus of all work that is done.*

It is expected that specialist management training would be undertaken by Senior Technologists involved in the management of staff and resources.

### 1.1 Leadership

- 1.1.1 Providing clear leadership to more junior staff by setting a high standard of provision of the nuclear medicine service for the benefit of patients, hospital staff and other service users.

### 1.2 Policies

- 1.2.1 Following all formal policies of the hospital, department or institution with regard to the management of staff and resources.
- 1.2.2 Ensuring that all such policies are kept available for reference whenever needed.

### 1.3 Quality management

- 1.3.1 Taking a lead role in and participating in the operation of any quality systems that are used in the institution (e.g. ISO 9001), ensuring that documentation, work instructions, protocols etc. are developed, updated and maintained to reflect accurately the work of the nuclear medicine department.
- 1.3.2 Ensuring that the quality management system is integrated into the work of the department, in a manner that reflects and supports daily practice, in order to guarantee the quality of the investigations, treatments and security of patients.

### 1.4 Organisation of work

- 1.4.1 Organising the working pattern for the department by planning work duties, on-call rotas, leave, etc.
- 1.4.2 Co-ordinating the work of the staff groups within the department.

### 1.5 Staff development

- 1.5.1 Monitoring the continuing training needs of staff and encouraging them to develop professionally to their full potential.
- 1.5.2 Identifying learning opportunities for all staff and ensuring that they are sent on suitable training courses and work placements to learn new skills and reinforce old ones.
- 1.5.3 Motivating staff by being actively involved in training activities.

### 1.6 Human Resources issues - with guidance and support from Human Resources officers –

- 1.6.1 *Recruitment and selection:*
  - 1.6.1.1 Participating in advertising for staff, short-listing for interview and interviewing candidates.
  - 1.6.1.2 Ensuring that the process is conducted fairly and that the most suitable candidate is chosen, giving regard to all relevant factors.
  - 1.6.1.3 Ensuring that all qualifications are checked as being acceptable and references are obtained prior to appointment.
- 1.6.2 *Conducting Individual Performance Reviews:*
  - 1.6.2.1 Following the institution's policy to ensure that all staff have their performance assessed, are informed of their progress, have training needs identified, have objectives set for development and are encouraged to develop to their full potential.
  - 1.6.2.2 Monitoring performance and conduct of staff.
  - 1.6.2.3 Intervening with staff whose performance or conduct is unsatisfactory or where there are other problems.
  - 1.6.2.4 When no other alternative exists, pursuing adequate Disciplinary Action against employees who breach standards of acceptable conduct, when this cannot otherwise be rectified.
  - 1.6.2.5 Monitoring Sickness/Absence by maintaining meticulous records of attendance by all staff.

## **1.7 Pastoral Care**

- 1.7.1 Looking after the welfare of staff.
- 1.7.2 Providing confidential support on personal matters that may have a bearing on the performance of duties.

## **1.8 Purchasing**

- 1.8.1 Organising the purchase of radiopharmaceuticals. This may include the tendering process and selection of products, arranging regular deliveries from standing orders, call-off arrangements, etc.
- 1.8.2 Participating in specification, selection, purchase and commissioning of new equipment (e.g. Gamma Cameras, Computers).
- 1.8.3 Organising purchase and supply of other consumables (e.g. laboratory plastic-ware, chemicals, pharmaceuticals, syringes).
- 1.8.4 Ensuring the highest standards of business conduct so that all purchases are made on the basis of suitability, reliability and price, rather than personal gifts or financial inducements from manufacturers.

## **1.9 Maintenance, service and repair management**

- 1.9.1 Taking a lead role in the process of monitoring equipment (e.g. via daily QC) so that it is known when maintenance is required and appropriate action is taken (e.g. reporting to senior staff, contacting service organisation) (see Chapter 3 – Management of Quality assurance and quality control).
- 1.9.2 Dealing with hospital personnel/technologists involved in service or first-line maintenance of equipment.
- 1.9.3 Liaising with manufacturers' service personnel to arrange service visits.
- 1.9.4 Ensuring minimum disruption to workload while equipment is being repaired or serviced.
- 1.9.5 Monitoring work of service personnel.
- 1.9.6 Ensuring that equipment is checked following repair before being released for use.
- 1.9.7 Participating in organising regular maintenance of equipment as required. This may include organising contracts for preventive maintenance visits and ensuring that systems are in place for prompt repair of faults that are detected in use.
- 1.9.8 Maintaining an inventory of equipment if required to do so.

## **1.10 Audit**

- 1.10.1 Checking effectiveness of the service by applying the principals of audit.
- 1.10.2 Complying with requirements of professional bodies, government departments and the institution for regular audit of the service.
- 1.10.3 Participating in internal and external audit of systems and processes, ensuring that problems are identified, remedial action is taken and re-audit is carried out to "close the audit loop".
- 1.10.4 Checking the effectiveness of any audit process.

## **1.11 Providing statistics for management**

- 1.11.1 Generating and distributing information (e.g. statistics) about all investigations, including workload, balance between types of study, staff radiation doses, radioactive waste, financial reports, etc...

## **1.12 Meetings**

- 1.12.1 Organising meetings as necessary to progress the work of the department.
- 1.12.2 Serving on the management team of the nuclear medicine department as required.
- 1.12.3 Participating in meetings effectively.
- 1.12.4 Providing leadership in meetings for all staff of the department.

## **Chapter 2: Information Management**

- ❖ ***Maintaining a sufficient level of privacy protection and data protection with regards to the verbal, written or electronic information entering and leaving the department***

### **2.1 Patient confidentiality**

- 2.1.1 Producing and monitoring systems to ensure that all information communicated by and about patients remains confidential and that access to all written and electronic information on any given patient is restricted to the staff directly involved.
- 2.1.2 Complying with systems of work for the safe and confidential operation of patient databases from sources inside and outside the department e.g. RIS, HIS, PACS
- 2.1.3 Ensuring that the safe storage of all patient information, written or electronic, complies with local and national regulations.

- ❖ ***Ensuring a proper information flow to and from the staff and to the patients and/or general public***

### **2.2 Patients**

- 2.2.1 Developing detailed written general information and that specific to certain procedures that can be sent to patients and their carers.
- 2.2.2 Ensuring proper radiation protection advice to patients and their carers.
- 2.2.3 Informing patients of any other advanced advice e.g. website.
- 2.2.4 In conjunction with medical staff, setting protocols regarding what information may and may not be given to patients and their carers by technical staff.

### **2.3 Department staff**

- 2.3.1 Keeping up to date with and sharing professional developments in a wider context.
- 2.3.2 Encouraging staff to obtain and share information.
- 2.3.3 Facilitating access to sources of information (e.g. medical library, internet access) and their use.

### **2.4 Other staff**

- 2.4.1 Developing detailed written general information and that specific to certain procedures that can be sent to the wards.
- 2.4.2 Ensuring relevant radiation protection advice is available to medical and ancillary staff in accordance with local rules.
- 2.4.3 Taking opportunities to inform medical staff about radionuclide studies offered in the department.

### **2.5 General public**

- 2.5.1 Familiarising oneself with information and initiatives taken by professional organisations and others to inform the general public about nuclear medicine.
- 2.5.2 Taking all opportunities to inform the general public about issues related to nuclear medicine in general and/or their own department.

### **2.6 Interaction within the nuclear medicine community**

- 2.6.1 Facilitating the publication of departmental work in either oral, poster, written or electronic form at appropriate local, national and/or international level.
- 2.6.2 Encouraging participation in professional organisations.
- 2.6.3 Taking opportunities to forge links with other nuclear medicine departments and industry.

## **Chapter 3: Management of Quality Assurance and Quality Control**

❖ *In conjunction with appropriate physics advice and based on local and national guidelines.*

### **3.1 Quality Control**

- 3.1.1 Producing instructions and protocols to set standards for performance of QC procedures, acquisition and evaluation of data and setting action levels for :
  - 3.1.1.1 Gamma camera and associated equipment.
  - 3.1.1.2 Counting equipment.
  - 3.1.1.3 Dose calibrators.
  - 3.1.1.4 Survey and contamination monitors.
  - 3.1.1.5 Dose rate meters.
  - 3.1.1.6 Film processor and other hardcopy devices.
  - 3.1.1.7 Monitoring that QC is undertaken following local protocols

### **3.2 Quality Assurance**

- 3.2.1 Monitoring the results and ensuring that appropriate action is taken when performance is outside acceptable ranges.
- 3.2.2 Ensuring that documentation is appropriate and effective for the tasks performed.

### **3.3 Training**

- 3.3.1 Identifying training needs of individual staff who perform QA/QC and ensuring that an appropriate senior member of staff is informed so that suitable training is provided.

## **Chapter 4: Specialisation**

- ❖ **Senior Technologists, in addition to achieving competence in tasks in these areas, may develop professionally by taking a leadership role in one or more areas of a nuclear medicine department, or in a separate specialist department.**

**4.1. A leadership role** may include:

- 4.1.1 Taking a supervisory role.
- 4.1.2 Managing systems of work.
- 4.1.3 Supervising stock control.
- 4.1.4 Supervising quality control.
- 4.1.5 Ensuring that all routine tasks are completed satisfactorily.
- 4.1.6 Monitoring standards of work.
- 4.1.7 Ensuring that protocols are amended, reviewed and updated as necessary.
- 4.1.8 Reporting problems in the area to appropriate senior members of staff, so that they can be rectified.

**4.2 Specialist areas** may include:

- 4.2.1 Nuclear Cardiology.
- 4.2.2 Neurological Nuclear Medicine.
- 4.2.3 Positron Emission Tomography.
- 4.2.4 Paediatrics.

*These areas to include acquisition, processing and specific patient care.*

- 4.2.5 Radio-pharmacy.
- 4.2.6 In vitro laboratory work.
- 4.2.7 Blood cell labelling techniques.
- 4.2.8 Therapeutic radionuclide administrations.

*These areas to include aseptic practice and specific radiation protection issues relating to external and internal contamination and to external exposure.*

- 4.2.9 Radiation protection.
- 4.2.10 Patient care and welfare, including developing information for patients and relatives.



## Chapter 5: Radiation Protection in the Nuclear Medicine Department

- ❖ *The Basic Safety Standards Directive (BSS) on the protection of workers and the general population against the dangers arising from Ionising Radiation Council Directives 96/29 Euratom, came into force in May 2000.*  
*Medical Exposure Directive (MED), a supplement of the BSS, on the protection of persons undergoing medical exposures, Council Directive 97/43 Euratom also became law in May 2000.*  
*Both of these directives have emphasised the need for the relevant competence in radiation protection, for all staff involved with ionising radiation. To ensure the appropriate standards are met in each of the European countries, it is necessary to set down the duties and levels of competency expected of the chief technologist.*

### 5.1 Radiation protection of the patient.

- 5.1.1 Acting to reduce as far as achievable the exposure of the patient to ionising radiation and monitoring and improving on an ongoing basis, the conditions that can affect radiation dose.
- 5.1.2 Ensuring written protocols are available for all procedures that are undertaken in the nuclear medicine department. (art. 6.1)
- 5.1.3 Having available written instruction for patients and accompanying persons on how to minimise their radiation doses after nuclear medicine procedures.
- 5.1.4 Ensuring clinical audits are carried out and results recorded, in conjunction with the practitioner and other appropriate staff. (art. 6.4)
- 5.1.5 Ensuring procedures are in place for the protection of females of childbearing age (art.10).
- 5.1.6 Increasing the awareness and education of female patients and/or accompanying persons who may be pregnant, by making available explanatory leaflets and public notices in appropriate places.
- 5.1.7 Knowing how to determine the amount of activity to be administered to paediatric patients, and ensure reference dose levels are not exceeded.
- 5.1.8 Carrying out, in conjunction with medical physics expert, measurements related to dose delivered to the patient.
- 5.1.9 Ensuring QA tests are carried out and results recorded before administration of a radiation dose.
- 5.1.10 Knowing appropriate reference doses and ensuring patient doses are within reference range.

### 5.2 Radiation Protection of the Hospital Staff:

- 5.2.1 The Chief Technologist is responsible for adequate theoretical and practical training in radiation protection required for technologists working in the department of Nuclear Medicine. (art.7)
- 5.2.2 The chief Technologist is responsible for special care for pregnant staff.
- 5.2.3 Ensuring that all equipment needed for radiation protection is available and used by staff members.
- 5.2.4 Encouraging and taking part in ongoing continuing education and training in relevant radiation protection, for other hospital staff, including medical staff, nurses, porters etc...
- 5.2.5 Ensuring all hospital staff involved with ionising radiation related to the Nuclear Medicine Department are monitored.

## **Chapter 6: Research and Development**

- ❖ *The Senior Technologist will participate in scientific research, initiating and performing research and supervise research projects in the area of nuclear medicine technology and techniques.*

### **6.1 Participation**

- 6.1.1 Participating in preliminary discussions considering the department research plans and schedules.
- 6.1.2 Informing staff of the implications.
- 6.1.3 Ensuring the adequate and correct collection, processing and storage of all required data of agreed scientific research projects.
- 6.1.4 Organising resources for the performance of the research activities.
- 6.1.5 In conjunction with the research project leader, ensuring proper feedback to the department's staff regarding the results of the project.

### **6.2 Initiation and Performance**

- 6.2.1 In conjunction with the department's staff, identifying suitable topics for research.
- 6.2.2 Negotiating and/or organising resources for the research project.
- 6.2.3 Performing or having performed analysis of the required data.
- 6.2.4 Producing a full report of research findings.
- 6.2.5 Making available the conclusions and recommendations of the project available to staff members and others involved in the project.
- 6.2.6 If suitable, giving an oral presentation or written publication on the project.

### **6.3 Supervision**

- 6.3.1 Encouraging staff members to perform research activities.
- 6.3.2 Assisting and advising staff members in the performance of their research activities.
- 6.3.3 Ensuring documentation and implementation of improvements suggested by the results of the research where applicable.

## **Chapter 7: Training and Education**

- ❖ ***Ensuring and facilitating an appropriate level of education and training of the department's trainees or students on a placement, with respect to local and national demands and legislation.***

### **7.1 Supervisory role**

- 7.1.1 Designating and facilitating the training of specific staff members to be mentor or supervisor of trainees and students in clinical placement.
- 7.1.2 Within any formal recognised scheme of training agreeing with the trainee the goals of the training period (subjects to be learned, the level of mastery required and the time in which to achieve these goals) and adapting these goals whenever necessary.
- 7.1.3 Identifying from the department's workload learning opportunities for the trainee.
- 7.1.4 Ensuring that proper instruction is being given to the student or trainee regarding what is and what is not expected of him or her.
- 7.1.5 Strongly encouraging trainees to adopt methodical work patterns.
- 7.1.6 Ensuring that regular feedback is given to the trainee or student regarding his or her performance, improvement, skills and attitude, in relation to the previously agreed goals.
- 7.1.7 Auditing the quality of the clinical training offered in conjunction with the educational institution involved
- 7.1.8 Supporting the mentor and trainee with any emotional issues arising from the work.
- 7.1.9 Arbitrating between the student and mentor in case of disagreement.

### **7.2 Education and Training**

- 7.2.1 Giving proper instruction regarding what the trainee is expected to do and not do.
- 7.2.2 Guiding the trainee to integrate observations with information rather than merely imitate.
- 7.2.3 Strongly encouraging the trainee to work methodically and systematically.
- 7.2.4 Giving feedback to the trainee regarding his or her skills, performance and attitude, both at regular intervals and when asked for by the trainee.
- 7.2.5 Guiding the trainee with respect to the emotional aspects of the professional situation, if necessary and appropriate related to previous experiences of the trainee.
- 7.2.6 Focussing on the quality of the trainee's work rather than on the quantity.

- ❖ ***Overseeing the appropriate level of continuous education of the department's staff members in accordance with the staff members potential and ambitions.***

### **7.3 Staff members**

- 7.3.1 Holding regular appraisal interviews with staff members to ascertain their educational needs and discuss their career plans.
- 7.3.2 Negotiating resources for training of staff.
- 7.3.3 Organising departmental workload to accommodate training schedules.
- 7.3.4 Ensuring that the expertise gained by individual staff members in continuous education will benefit the department as a whole.

- ❖ ***Identifying the training needs which will arise from projected departmental development and organising this training for appropriate staff members.***

### **7.4 Innovations**

- 7.4.1 Identifying the new skills required from the staff members that will arise from any departmental innovations.
- 7.4.2 Identifying which members of staff would be most appropriate for initial training.
- 7.4.3 Negotiating, organising and facilitating the training.
- 7.4.4 Organising that the new expertise is disseminated amongst the rest of the staff