COLLEGE OF PHYSICIANS AND SURGEONS OF BRITISH COLUMBIA

Diagnostic Accreditation Program

ACCREDITATION STANDARDS

Nuclear Medicine – Positron Emission (PET, PET/CT)

Diagnostic Accreditation Program
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Introduction

In addition to the general standards, the discipline-specific accreditation standards for nuclear medicine provides additional mandatory requirements and best practices for accreditation in the modality of nuclear medicine.

Examination request

No.		Description	Risk	Reference	Change
PET1.0		**NUCLEAR MEDICINE – PET AND PET/CT EXAMINATION REQUESTS** *Guidance: See also global modality GM1.0 for additional requirements.*			New
PET1.1		**Examination requisitions are processed.** *Guidance: See GM1.1 for additional requirements.*			New
PET1.1.1	**M**	Processing of the examination requests ensures there is a review by a qualified physician or delegate for appropriateness, priority and protocol assignment, prior to booking the examination.	M	PET-AC-23	New

Patient preparation

No.		Description	Risk	Reference	Change
					New
PET2.0		**NUCLEAR MEDICINE – PET AND PET/CT PATIENT PREPARATION** *Guidance: See also global modality GM2.0 for additional requirements.*			
PET2.1		**Patient preparation instructions are clearly communicated.** *Guidance: See GM2.1 for additional requirements.*			New
PET2.1.1	**B**	Patients are provided with post examination radiation precaution guidance, as applicable. *Guidance: The medical director or delegate determines which examination types require post-examination radiation precaution guidance. Patient instructions may include maintaining distance from others, control of body fluids, handling of potentially radioactive household trash, international travel precautions, limiting interactions with the pediatric population, and the duration of these restrictions. Additionally, if relevant, guidance concerning breastfeeding or the cessation thereof is also included.*		PET-AC-23	New
PET2.1.2	**M**	Patients are provided with pre-examination dietary instructions, as applicable.	M	PET-AC-23	New
PET2.1.3	**M**	If glucose analogues, such as fluorodeoxyglucose (FDG), are administered, diabetic patients are provided with instructions regarding the pre-examination measurement of fasting blood sugars.	M	PET-AC-23	New
PET2.1.4	**M**	If glucose analogues, such as fluorodeoxyglucose (FDG), are administered, diabetic patients are provided with instructions regarding the pre-examination management of diabetic medications (e.g. insulin, metformin and oral hypoglycemics).	M	PET-AC-23	New
PET2.2		**Pre-examination information is collected and assessed prior to commencing the examination.** *Guidance: See GM2.2 for additional requirements.*			New
PET2.2.1	**M**	Contraindications are identified and documented. *Guidance: Contraindications are specific to the radiopharmaceutical utilized. The identified contraindications are evidence-based and may include, but are not limited to, pregnancy, breastfeeding, contraindicated medications, and allergies.*	H	PET-AC-23	New
PET2.2.2	**M**	The most responsible physician is involved in assessing any contraindications.	H	PET-AC-23	New

No.		Description	Risk	Reference	Change
PET2.2.3	**M**	Patients are screened for compliance with pre-examination dietary instructions.	M	PET-AC-23	New
PET2.2.4	**M**	Clinically relevant medical history is obtained and documented (e.g. recent surgery, chemotherapy, radiotherapy and relevant medications).	M	PET-AC-23	New
PET2.2.5	**M**	Patient's height and weight is measured and documented at the time of the examination.	M	PET-AC-23	New
PET2.2.6	**M**	If glucose analogues, such as fluorodeoxyglucose (FDG), are administered, fasting blood sugar levels are measured and documented at the time of the examination.	M	PET-AC-23	New

Imaging procedures

No.		Description	Risk	Reference	Change
					New
PET3.0		**NUCLEAR MEDICINE – PET AND PET/CT STANDARD OPERATING PROCEDURES/PROTOCOLS** *Guidance: See also global modality GM3.0 for additional requirements.*			
PET3.1		**There is a comprehensive process in place for protocol adoption and development.** *Guidance: See GM3.1 for additional requirements.*			New
PET3.1.1	**M**	Protocols are reviewed every one to three years by qualified individuals.	M	PET-AC-23	New
PET3.2		**Protocols include all the information necessary to perform the examination.**			New
PET3.2.1	**M**	Protocol information includes the equipment/supplies needed.	M	PET-AC-23	New
PET3.2.2	**M**	Protocol information includes a description of patient positioning (e.g. supine, prone, posterior, anterior, head in, head out, arms up, arms down, etc.).	M	PET-AC-23	New
PET3.2.3	**M**	Protocol information includes description of the technical parameters. *Guidance: The protocols are to include technical parameters such as timing, reconstructions, imaging area, etc.*	M	PET-AC-23	New
PET3.2.4	**M**	Protocol information includes a description of the radiopharmaceuticals administered. *Guidance: For the purposes of a technologist examination protocol, the description of radiopharmaceuticals identifies which radiopharmaceutical is utilized (e.g. name and isotope) and any specific preparation.*	M	PET-AC-23	New
PET3.2.5	**M**	Protocol information includes a description of contrast agents administered for contrast enhanced PET/CT examinations.	M	PET-AC-23	New
PET3.2.6	**B**	Protocol information includes a description of data processing. *Guidance: Attenuation correction method, if used, and reconstruction algorithm.*		PET-AC-23	New
PET3.2.7	**M**	Protocols information includes pediatric imaging guidance. *Guidance: Pediatric protocol information includes a description of how CT scanning techniques and imaging factors are modified to ensure imaging is achieved as Low as reasonably achievable (ALARA).*	M	PET-AC-23	New

No.		Description	Risk	Reference	Change
PET3.3		**Examinations are performed following established protocols.**			New
PET3.3.1	**M**	Protocols are readily available to staff performing the examination.	H	PET-AC-23	New
PET3.3.2	**M**	Protocols are equipment specific.	M	PET-AC-23	New

Radiopharmaceutical administration procedures

No.		Description	Risk	Reference	Change
PET3.4		**The administration of radiopharmaceuticals is performed following established protocols.** *Guidance: See also radiopharmaceutical preparation quality assurance and safety NM14.0 for additional requirements.*			New
PET3.4.1	**M**	Protocols for the administration of radiopharmaceuticals are readily available.	H	PET-AC-23	New
PET3.4.3	**M**	The radiopharmaceutical is identified along with the administered activity, timing and route of administration. Administered activity does not exceed the established facility protocols.	H	PET-AC-23	New
PET3.4.4	**M**	There are administered activity protocols for the pediatric population, which include administered activity limits (i.e. maximum activity). Administered activity does not exceed the established facility pediatric protocols. *Guidance: Administered activity is calculated by weight if a procedure does not follow a standardized administered activity.*	H	PET-AC-23	New
PET3.4.5	**M**	Radiopharmaceuticals are administered for indications according to manufacturer's specifications. *Guidance: In some instances, radiopharmaceuticals may be used for indications other than manufacturer's specifications if a recognized precedent has been established and there is documentation to validate the practice of using alternate radiopharmaceuticals.*	M	PET-AC-23	New
PET3.4.6	**M**	There is a mechanism in place to report adverse reactions to radiopharmaceuticals.	M	PET-AC-23	New

Pharmacologic agent procedures

No.		Description	Risk	Reference	Change
PET3.5		**The preparation and administration of pharmacologic agents are performed following established protocols.** *Guidance: Pharmacologic agents administered during nuclear medicine examinations can include, but are not limited to, insulin, diuretics, antispasmodics, vasodilators, bronchodilators and benzodiazepines. PET3.5 does not apply to radiopharmaceuticals (see PET3.4) or intravascular contrast media (see GM4.0). See also DMA regarding delegation of medical acts and DPS4.0 regarding medication management.*			New
PET3.5.1	**M**	Policies and procedures are in place for technologists who administer pharmacologic agents. *Guidance: See also medical staff DMA regarding delegation of medical acts.*	M	PET-AC-23	New
PET3.5.2	**M**	Protocols for the preparation and administration of pharmacologic agents are readily available.	H	PET-AC-23	New
PET3.5.3	**M**	All pharmacologic agents are prepared and administered as per manufacturer's specifications.	H	PET-AC-23	New
PET3.5.7	**M**	Storage of pharmacologic agents complies with manufacturer's recommendations.	H	PET-AC-23	New
PET3.5.8	**M**	The most responsible physician supervises pharmacological agent administration. *Guidance: Supervision means that the physician is immediately available to provide assistance and direction throughout the performance of the procedure and respond to adverse events. The method of supervision is identified (PET3.5.9) and can include remotely by phone, in room monitoring or by other means as approved by the medical director.*	H	PET-AC-23	New
PET3.5.9	**M**	The method of supervision of pharmacological agent administration is identified and approved by the medical director or delegate. *Guidance The medical director reviews the risks associated with the procedure and determines the most appropriate methods of supervision. The method can include remotely by phone, in room monitoring or by other means. See also DPS6.0 medical emergency management.*	H	PET-AC-23	New
PET3.5.10	**B**	The most responsible physician is aware of specific relative contraindications and pertinent risk factors that might increase the likelihood of adverse events.		PET-AC-23	New

No.		Description	Risk	Reference	Change
PET3.5.11	**B**	The most responsible physician is knowledgeable in the recognition and treatment of adverse events (e.g. idiosyncratic reactions, extravasations).		PET-AC-23	New

Radiopharmaceutical therapy procedures

No.		Description	Risk	Reference	Change
PET3.6		**Radiopharmaceutical therapy procedures are performed following established protocols.** *Guidance: Radiopharmaceutical therapy includes theranostic procedures.*			New
PET3.6.1	**M**	The radiopharmaceutical is identified along with the prescribed administered activity, timing and route of administration.	H	PET-AC-23	New
PET3.6.2	**M**	There is a documented prescription for radiopharmaceutical therapy by the most responsible physician. *Guidance: See DPS4.0 for additional requirements.*	H	PET-AC-23	New
PET3.6.6	**M**	Radiopharmaceutical therapy procedures include documented consultation by a physician qualified in radiopharmaceutical therapy.	H	PET-AC-23	New
PET 3.6.7	**M**	Radiopharmaceutical therapy procedures include obtaining informed consent. *Guidance: See also patient and client focus DPC3.4.*	H	PET-AC-23	New
PET 3.6.8	**M**	Radiopharmaceutical therapy procedures include ongoing patient monitoring when a patient requires hospitalization. *Guidance: When a patient requires hospitalization as part of receiving radiopharmaceutical therapy, nuclear medicine staff are involved in monitoring the dose rate from the patient.*	H	PET-AC-23	New
PET3.6.9	**M**	Radiopharmaceutical therapy procedures include medical record documentation.	H	PET-AC-23	New
PET3.6.10	**M**	Radiopharmaceutical therapy procedures include communicating radiation precautions following treatment. *Guidance: Depending on the radiopharmaceutical therapy given, patient instructions may include maintaining distance from others, control of body fluids, handling of potentially radioactive household trash, limiting interactions with the pediatric population, and the duration of these restrictions. Additionally, if relevant, guidance concerning breastfeeding or the cessation thereof is also included.*	H	PET-AC-23	New

No.		Description	Risk	Reference	Change
PET3.6.11	**B**	When a patient requires hospitalization as part of receiving radiopharmaceutical therapy, the staff responsible for the patient follow a care plan. *Guidance: A care plan is a carefully prepared outline of nursing care which identifies all of the patient's needs during the procedure and how to address those needs.*		PET-AC-23	New
PET3.6.12	**M**	The most responsible physician supervises radiopharmaceutical therapy procedures. *Guidance: Supervision means that the physician is immediately available to provide assistance and direction throughout the performance of the procedure and respond to adverse events. The method of supervision is identified (PET3.6.13) and can include remotely by phone, in room monitoring or by other means as approved by the medical director.*	H	PET-AC-23	New
PET3.6.13	**M**	The method of supervision of radiopharmaceutical therapy procedures is identified and approved by the medical director or delegate. *Guidance: The medical director reviews the risks associated with the procedure and determines the most appropriate methods of supervision. The method can include remotely by phone, in room monitoring or by other means. See also DPS6.0 medical emergency management.*	H	PET-AC-23	New
PET3.6.14	**B**	The most responsible physician is aware of specific relative contraindications and pertinent risk factors that might increase the likelihood of adverse events.		PET-AC-23	New
PET3.6.15	**B**	The most responsible physician is knowledgeable in the recognition and treatment of adverse events (e.g. idiosyncratic reactions, extravasations).		PET-AC-23	New

Image review

No.		Description	Risk	Reference	Change
PET3.7		**Images are reviewed for diagnostic quality before the patient is released.**			New
PET3.7.1	**M**	Image review ensures the relevant anatomic area of interest is included.	H	PET-AC-23	New
PET3.7.2	**M**	Image review ensures the presence of artifacts and motion does not impact the diagnostic image quality.	H	PET-AC-23	New
PET3.7.3	**M**	Image review ensures the count density is adequate.	H	PET-AC-23	New
PET3.7.4	**B**	Image review ensures the evidence of anatomic markers, where appropriate.		PET-AC-23	New
PET3.7.5	**M**	Image review ensures the data sets are reviewed for diagnostic quality.	H	PET-AC-23	New
PET3.7.6	**M**	Image review ensures PET/CT images are reviewed to verify co-registration.	H	PET-AC-23	New

Appropriate physical environment

No.		Description	Risk	Reference	Change
					New
PET6.0		**NUCLEAR MEDICINE – PET AND PET/CT PHYSICAL ENVIRONMENT**			
PET6.1		**Nuclear medicine procedures are performed in an environment designed to ensure patient and staff safety.**			New
PET6.1.1	**M**	Radiopharmaceutical therapy procedures are performed in locations with consideration of staff and patient radiation safety precautions.	H	PET-AC-23	New
PET6.1.2	**B**	There are appropriate "hot" and "cold" patient waiting areas.		PET-AC-23	New
PET6.1.3	**M**	There are appropriate "hot" patient washrooms.	M	PET-AC-23	New
PET6.1.4	**M**	There is appropriate space available for radiopharmaceutical preparation.	H	PET-AC-23	New
PET6.1.5	**M**	There is appropriate space available for administration of radiopharmaceuticals (e.g. injection).	M	PET-AC-23	New
PET6.1.7	**M**	There is appropriate space available for storage of radioactivity sources and items contaminated with radioactivity.	H	PET-AC-23	New
PET6.1.8	**B**	When study quality may be affected by anomalous uptake by external stimuli, radiopharmaceutical administration is performed in quiet and comfortable spaces. *Guidance: The environment design and interventions vary relative to the degree that anomalous uptake by external stimuli affects examination quality.*		PET-AC-23	New

Medical records

No.		Description	Risk	Reference	Change
					New
PET7.0		**NUCLEAR MEDICINE – PET AND PET/CT MEDICAL RECORD DOCUMENTATION** *Guidance: See also global modality GM7.0 for additional requirements.*			
PET7.2		**Comprehensive examination details are recorded in the medical record.** *Guidance: See also global modality GM7.2.*			New
PET7.2.1	**M**	Comprehensive examination details recorded in the medical record includes breast feeding status.	H	PET-AC-23	New
PET7.2.2	**M**	Comprehensive examination details recorded in the medical record includes known medications and allergies, relevant to the examination.	M	PET-AC-23	New
PET7.2.3	**M**	Comprehensive examination details recorded in the medical record includes radiopharmaceutical agent being identified including the administered activity, time, route of administration and the individual administering.	H	PET-AC-23	New
PET7.2.4	**M**	Comprehensive examination details recorded in the medical record includes pharmacologic agents being identified including the dosage, time, route of administration, individual administering and any precautions or restrictions.	H	PET-AC-23	New

Interpretation and reports

No.		Description	Risk	Reference	Change
					New
PET8.0		**NUCLEAR MEDICINE – PET AND PET/CT INTERPRETATION AND REPORTS** *Guidance: See also global modality GM8.0 for additional requirements.*			
PET8.2		**Reports contain sufficient information to assist in diagnosis.** *Guidance: See also global modality accreditation standards GM8.2 for additional mandatory requirements.*			New
PET8.2.1	**M**	The body of the report includes procedures performed and materials. *Guidance: An adequate description of the procedure performed. The description includes the name of the procedure (type of the examination(s) or protocol). It also includes the specific name, specific amount (where appropriate), and route of administration of any radioactive or non-radioactive material administered. If applicable, the type of stress, pharmacologic agent, dose and route of administration is described. If applicable the type and use of attenuation correction is specified.*	H	PET-AC-23	New

Acceptance testing

No.		Description	Risk	Reference	Change
					New
PET12.0		**ACCEPTANCE TESTING - PET & PET/CT SYSTEMS AND ANCILLARY EQUIPMENT** *Guidance: See also equipment and supplies DES2.0 for additional requirements.* *Guidance: Acceptance testing is performed by a nuclear medicine physicist who meets the requirements of MIQR1.13.4.*			
PET12.1		**Acceptance testing is performed by a medical physicist after installation and prior to clinical use of PET Systems.** *Guidance: For information regarding standardized testing procedures, refer to NEMA NU 2-2018 Performance Measurements of Positron Emission Tomographs (https://www.nema.org/standards/view/performance-measurements-of-positron-emission-tomographs).*			New
PET12.1.1	**M**	Acceptance testing of PET systems includes visual and functional testing of the mechanical properties, as well as any other mechanical checks as recommended by the vendor.	H	PET-AC-23	New
PET12.1.2	**M**	Acceptance testing of PET systems includes a visual and functional evaluation of the safety systems for damage, as well as any other safety checks as recommended by the vendor.	H	PET-AC-23	New
PET12.1.3	**M**	Acceptance testing of PET systems includes evaluation of spatial resolution.	H	AAPM-126	New
PET12.1.4	**M**	Acceptance testing of PET systems includes evaluation of sensitivity.	H	AAPM-126	New
PET12.1.5	**M**	Acceptance testing of PET systems includes evaluation of count rate performance and accuracy of corrections. *Guidance: Scatter fraction, count losses and randoms measurements.*	H	AAPM-126	New
PET12.1.6	**M**	Acceptance testing of PET systems includes evaluation of image quality.	H	AAPM-126	New
PET12.1.7	**M**	Acceptance testing of PET systems includes evaluation of image uniformity. *Guidance: PET image uniformity assessment is a measure of the deviation in the activity concentration within a slice, as well as across slices of a uniform phantom.*	H	AAPM-126	New

No.		Description	Risk	Reference	Change
PET12.1.8	**M**	Acceptance testing of time-of-flight PET systems, (TOF PET) includes evaluation of the coincidence timing resolution/time-of-flight capability.	H	PET-AC-23	New
PET12.2		**Acceptance testing is performed after purchase and prior to clinical use of well counter systems.** *Guidance: PET12.2 is applicable if a well counter systems is maintained by the PET nuclear medicine service for PET purposes.*			New
PET12.2.1	**M**	Acceptance testing of well counter systems includes evaluation of crystal energy resolution.	H	PET-AC-23	New
PET12.2.3	**M**	Acceptance testing of well counter systems includes evaluation of minimum detectable levels.	H	PET-AC-23	New
PET12.2.4	**M**	Acceptance testing of well counter systems includes evaluation of sensitivity for each isotope, where appropriate. *Guidance: Sensitivity measurements are performed on each isotope that is subject to assessments.*	H	PET-AC-23	New
PET12.2.5	**M**	Acceptance testing of well counter systems includes evaluation of radionuclide window settings.	H	PET-AC-23	New
PET12.2.6	**M**	Acceptance testing of well counter systems includes a calibration using a reference standard.	H	PET-AC-23	New
PET12.2.7	**M**	Acceptance testing of well counter systems includes a chi-square reproducibility test.	H	PET-AC-23	New
PET12.2.8	**M**	Acceptance testing of well counter systems includes a normalization for multi-well systems.	H	PET-AC-23	New
PET12.2.9	**M**	Acceptance testing of well counter systems includes evaluation of deadtime *Guidance: Identify count rate that results in 20% loss*	H	PET-AC-23	New
PET12.4		**Acceptance testing is performed after purchase and prior to clinical use of radionuclide calibrator systems ("dose calibrator").**			
PET12.4.1	**M**	Acceptance testing of radionuclide calibrator systems includes evaluation of accuracy with different geometries.	H	PET-AC-23	New
PET12.4.2	**M**	Acceptance testing of radionuclide calibrator systems includes establishing references values for constancy testing.	H	PET-AC-23	New

No.		Description	Risk	Reference	Change
PET12.4.3	**M**	Acceptance testing of radionuclide calibrator systems includes evaluation of linearity.	H	PET-AC-23	New
PET12.4.4	**M**	Acceptance testing of radionuclide calibrator systems includes evaluation of accuracy.	H	PET-AC-23	New
PET12.5		**Acceptance testing is performed after purchase and prior to clinical use of PET/CT systems.**			New
PET12.5.2	**M**	Acceptance testing of PET/CT systems performing independent diagnostic CT examinations for interpretation, includes CT component acceptance testing, which is performed according to CT12.1. *Guidance: The CT imaging system component of PET/CT systems may have the functionality to be used for both nuclear medicine examinations (e.g. FDG total body) and CT examinations (e.g. non-contrast head). If the CT imaging scope is limited to nuclear medicine examinations, thus CT imaging is used for co-registration and scout imaging, then CT component acceptance testing requirements conform to PET12.5.5. If the CT imaging scope includes CT examinations, then the CT component acceptance testing requirements conforms to CT12.1.*	H	PET-AC-23	New
PET12.5.3	**M**	Acceptance testing of all PET/CT systems includes evaluation of PET/CT co-registration accuracy.	H	PET-AC-23	New
PET12.5.4	**M**	Acceptance testing of all PET/CT systems includes PET evaluation which is performed according to PET12.1.	H	PET-AC-23	New
PET12.5.5	**M**	Acceptance testing of PET/CT systems performing CT attenuation correction and scout imaging only, includes CT component acceptance testing, which is performed according to the manufacturer's recommendations. *Guidance: The CT imaging system component of PET/CT systems may have the functionality to be used for both nuclear medicine examinations (e.g. FDG total body) and CT examinations (e.g. non-contrast head). If the CT imaging scope is limited to nuclear medicine examinations, thus CT imaging is used for co-registration and scout imaging, then CT component acceptance testing requirements conform to PET12.5.5 and is performed by a nuclear medicine physicist (MIQE1.13.4). If the CT imaging scope includes CT examinations, then the CT component acceptance testing requirements conforms to CT12.1 and is performed by a CT physicist (MIQR1.13.2).*	H	PET-AC-23	New

PET and PET/CT systems quality assurance

No.		Description	Risk	Reference	Change
PET13.0		**QUALITY CONTROL TESTING OF PET AND PET/CT SYSTEMS AND ANCILLARY EQUIPMENT** *Guidance: See also equipment and supplies DES3.0 for additional requirements.*			
PET13.1		**Daily quality control procedures are established and used to monitor PET systems.**			New
PET13.1.1	**M**	Daily quality control testing of PET systems includes the manufacturer's recommended daily quality control tests.	H	PET-AC-23	New
PET13.2		**Routine quality control procedures are established and used to monitor PET systems.**			New
PET13.2.1	**M**	Quarterly quality control testing of PET systems includes an evaluation of image uniformity. *Guidance: PET image uniformity assessment is a measure of the deviation in the activity concentration within a slice, as well as across slices of a uniform phantom.*	H	IAEA-QC-PET	New
PET13.2.2	**M**	Quarterly quality control testing of PET systems includes PET system normalization and calibration.	H	IAEA-QC-PET	New
PET13.2.3	**B**	Quarterly quality control testing of PET systems includes evaluation of PET/CT co-registration accuracy.		AAPM -126	New
PET13.4		**Annual quality control procedures are established and used to monitor PET systems.**			New
PET13.4.1	**M**	Annual quality control testing of PET systems includes visual and functional testing of the mechanical properties, as well as any other mechanical checks as recommended by the vendor.	M	PET-AC-23	New
PET13.4.2	**M**	Annual quality control testing of PET systems includes a visual and functional evaluation of the safety systems for damage, as well as any other safety checks as recommended by the vendor.	M	PET-AC-23	New
PET13.4.3	**M**	Annual quality control testing of PET systems includes evaluation of spatial resolution.	M	AAPM-126	New
PET13.4.4	**M**	Annual quality control testing of PET systems includes evaluation of sensitivity.	M	AAPM-126	New

No.		Description	Risk	Reference	Change
PET13.4.5	**M**	Annual quality control testing of PET systems includes evaluation of count rate performance and accuracy of corrections. *Guidance: Scatter fraction, count losses and randoms measurements.*	M	AAPM-126	New
PET13.4.6	**M**	Annual quality control testing of PET systems includes evaluation of image quality.	M	AAPM-126	New
PET13.4.8	**M**	Annual quality control testing of time-of-flight PET systems (TOF PET) includes evaluation of the coincidence timing resolution/time-of-flight capability.	M	PET-AC-23	New
PET13.4.9	**B**	Annual quality control testing of PET systems includes a review of routine quality control testing records by a nuclear medicine physicist. *Guidance: It is recommended that a nuclear medicine physicist reviews quality control records semi-annually.*	M	PET-AC-23	New
PET13.5		**Routine quality control procedures are established and used to monitor PET/CT systems.**			New
PET13.5.1	**M**	Routine quality control testing of PET/CT systems performing independent diagnostic CT examinations for interpretation, includes CT component quality control testing, which is performed according to CT13.1, CT13.2, CT13.3, CT13.4, CT13.5 and CT13.6. *Guidance: The CT imaging system component of PET/CT systems may have the functionality to be used for both nuclear medicine examinations (e.g. FDG total body) and CT examinations (e.g. non-contrast head). If the CT imaging scope is limited to nuclear medicine examinations, thus CT imaging is used for co-registration and scout imaging, then CT component quality control testing requirements conform to PET13.5.2. If the CT imaging scope includes CT examinations, then the CT component quality control testing requirements conforms to CT13.*	H	PET-AC-23	New

No.		Description	Risk	Reference	Change
PET13.5.2	**M**	Routine quality control testing of PET/CT systems performing CT attenuation correction and scout imaging only, includes CT component quality control testing, which is performed according to the manufacturer's recommendations. *Guidance: The CT imaging system component of PET/CT systems may have the functionality to be used for both nuclear medicine examinations (e.g. FDG total body) and CT examinations (e.g. non-contrast head). If the CT imaging scope is limited to nuclear medicine examinations, thus CT imaging is used for co-registration and scout imaging, then CT component quality control testing requirements conform to PET13.5.2. If the CT imaging scope includes CT examinations, then the CT component quality control testing requirements conforms to CT13.*	H	PET-AC-23	New
PET13.5.3	**M**	Annual quality control testing of all PET/CT systems includes evaluation of PET/CT co-registration accuracy.	H	PET-AC-23	New
PET13.5.4	**M**	Routine quality control testing of all PET/CT systems includes PET quality control testing which is performed according to PET13.1, PET13.2, and PET13.4.	H	PET-AC-23	New

Well counter systems quality assurance

No.		Description	Risk	Reference	Change
PET13.6		**Daily quality control procedures are established and used to monitor well counter systems.** *Guidance: PET13.6 is applicable if a well counter systems is maintained by the PET nuclear medicine service for PET purposes.*			New
PET13.6.1	**M**	Daily quality control testing of well counter systems includes a background activity measurement. *Guidance: To be performed daily or each day the well counter system is in use.*	H	PET-AC-23	New
PET13.6.2	**M**	Daily quality control testing of well counter systems includes calibration using a reference standard. *Guidance: To be performed daily or each day the well counter system is in use. Use a source traceable to a national standard as per manufacturer recommendations.*	H	PET-AC-23	New
PET13.7		**Quarterly quality control procedures are established and used to monitor well counter systems.** *Guidance: PET13.7 is applicable if a well counter systems is maintained by the PET nuclear medicine service for PET purposes.*			New
PET13.7.1	**M**	Quarterly quality control testing of well counter systems includes a chi-square reproducibility test.	M	PET-AC-23	New
PET13.7.2	**M**	Quarterly quality control testing of well counter systems includes a normalization for multi-well counter systems.	M	PET-AC-23	New

Radionuclide calibrator systems quality assurance ("dose calibrator")

No.		Description	Risk	Reference	Change
PET13.11		**Daily quality control procedures are established and used to monitor radionuclide calibrator systems ("dose calibrator").**			New
PET13.11.1	**M**	Daily quality control testing of radionuclide calibrator systems includes a zero and background verification.	H	PET-AC-23	New
PET13.11.2	**M**	Daily quality control testing of radionuclide calibrator systems includes an instrument function test.	H	PET-AC-23	New
PET13.11.3	**M**	Daily quality control testing of radionuclide calibrator systems includes evaluation of the constancy.	H	PET-AC-23	New
PET13.12		**Quarterly quality control procedures are established and used to monitor radionuclide calibrator systems ("dose calibrator").**			New
PET13.12.1	**M**	Quarterly quality control testing of radionuclide calibrator systems includes evaluation of instrument linearity.	M	PET-AC-23	New
PET13.13		**Annual quality control procedures are established and used to monitor radionuclide calibrator systems ("dose calibrator").**			New
PET13.13.1	**M**	Annual quality control testing of radionuclide calibrator systems includes evaluation of accuracy.	M	PET-AC-23	New

Radiopharmaceutical preparation, quality assurance and safety

No.		Description	Risk	Reference	Change
					New
PET14.0		**RADIOPHARMACEUTICAL PREPARATION, QUALITY ASSURANCE AND SAFETY**			
PET14.1		**Safe and effective cleaning of the hot lab is ensured.**			New
PET14.1.1	**M**	All working surfaces are cleaned daily with a disinfectant.	H	PET-AC-23	New
PET14.1.2	**M**	All used syringe shields are cleaned daily with a disinfectant.	H	PET-AC-23	New
PET14.1.3	**M**	Absorbent pads (e.g. tripads) are only placed while working and then are removed and discarded. *Guidance: At a minimum, absorbent pads are discarded daily in areas where radiopharmaceuticals are prepared and dispensed.*	H	PET-AC-23	New
PET14.1.4	**M**	Fume hoods, laminar flow hoods and biological safety cabinets contain only items necessary for the task completed within them. *Guidance: Minimizing the number of items within hoods and safety cabinets will improve air flow and reduce air turbulence.*	H	PET-AC-23	New
PET14.1.5	**M**	All exposed surfaces within the hot lab including lead shields and holders, cupboards and equipment are cleaned monthly.	H	PET-AC-23	New
PET14.2		**Routine practices are implemented to minimize contamination risk in and outside the hot lab.**			New
PET14.2.1	**M**	Hand hygiene is performed prior to all hot lab functions. *Guidance: Hot lab functions include milking generators, preparing radiopharmaceuticals, performing quality control of radiopharmaceuticals, drawing activity.*	H	PET-AC-23	New
PET14.2.2	**M**	Hand hygiene is performed after all hot lab functions.	H	PET-AC-23	New
PET14.2.3	**M**	Gloves are immediately removed upon completion of hot lab functions and prior to leaving the hot lab.	H	PET-AC-23	New
PET14.2.4	**B**	Dedicated lab coats/gowns are worn in the hot lab when preparing or dispensing radiopharmaceuticals.		PET-AC-23	New

No.		Description	Risk	Reference	Change
PET14.3		**There are established protocols in place for the preparation of radiopharmaceuticals.**			New
PET14.3.1	**M**	Protocols for the preparation of radiopharmaceuticals are readily available. *Guidance: Protocols identify when laminar flow (e.g. shielded BSC) is required.*	M	PET-AC-23	
PET14.3.2	**M**	Radiopharmaceuticals are prepared according to manufacturers' specifications. *Guidance: In some instances, radiopharmaceuticals may not be prepared according to manufacturers' specifications if a recognized precedent has been established and there is documentation to validate product stability.*	H	PET-AC-23	
PET14.4		**Quality control procedures are performed for radionuclide generators**			New
PET14.4.1	**M**	Quality control procedures are performed for radionuclides produced by radionuclide generators, as per the manufacturer's recommendations. *Guidance: For 99Mo/99mTc04 radionuclide generators apply NM14.3*	H	PET-AC-23	New
PET14.6		**Quality control procedures are performed for commercially produced radiopharmaceuticals.**			New
PET14.6.1	**M**	For commercially produced radiopharmaceuticals, administered activity are assayed in a radionuclide calibrator system ("dose calibrator"). *Guidance: This includes commercially prepared unit-administered activities.*	H	PET-AC-23	New
PET14.6.2	**M**	A visual check is performed for commercially produced radiopharmaceuticals.	H	PET-AC-23	New

Radiopharmaceutical records

No.		Description	Risk	Reference	Change
					New
PET15.0		**RADIOPHARMACEUTICAL RECORDS**			
PET15.2		**Radiopharmaceuticals receipts are documented.**			New
PET15.2.1	**M**	Records are kept for the receipt of commercially produced radiopharmaceuticals.		PET-AC-23	New
PET15.3		**Radiopharmaceuticals are labeled appropriately.** *Guidance: The radiopharmaceutical name or unique identifier must be included on the label.*			New
PET15.3.1	**M**	Radiopharmaceuticals are labeled with the total volume.	H	PET-AC-23	New
PET15.3.2	**M**	Radiopharmaceuticals are labeled with the total activity.	H	PET-AC-23	New
PET15.3.3	**M**	Radiopharmaceuticals are labeled with the assay time, date and expiry.	H	PET-AC-23	New

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Abbreviation	Citation
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IAEA-QC-PET	International Atomic Energy Agency. Quality Assurance for PET and PET/CT Systems [Internet]. Vienna: International Atomic Energy Agency; 2009. Available from https://wwwpub.iaea.org/MTCD/Publications/PDF/Pub1393_web.pdf
NEMA-NU2	National Electrical Manufacturers Association. NEMA NU 2-2018 Performance Measurements of Positron Emission Tomographs (PETS) [Internet]. Virginia: NEMA; 2018. Available from: https://www.nema.org/standards/view/performance-measurements-of-positron-emission-tomographs
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