Name of Policy: Quality Control of Nuclear Medicine Equipment **Policy Number**: 3364-135-136 **Approving Officer**: Assistant Professor & Deputy Clinical Service Chief, Director, Radiology **Responsible Agent**: Director, Radiology **Scope**: University of Toledo Medical Center Radiology	UTOLEDO HEALTH **Effective date:** 12/1/2024 **Original effective date**: 10/31/2012
Key words: Quality Control, Nuclear Medicine, Equipment, Radiopharmaceutical, Administration	

☐	New policy proposal	X	Minor/technical revision of existing policy
☐	Major revision of existing policy	☐	Reaffirmation of existing policy

(A) Policy statement

Routine testing of nuclear medicine equipment shall be performed to ensure accurate patient radiopharmaceutical administration, optimal image quality and compliance with regulations involving radioactive materials (RAM)

(B) Purpose of policy

To minimize the possibility of administering the incorrect prescribed radiopharmaceutical activity, and to ensure proper operation of the measurement and imaging systems used in nuclear medicine departments.

(C) Procedure

1. Any nuclear medicine equipment that fails quality control testing must be removed from service until inspected and/or certified for use by the appropriate personnel. Repeat testing and performance evaluation may be required prior to clinical use, depending on the equipment.

2. Dose calibrator accuracy: Dose calibrator systems will be tested upon installation and annually for accuracy relative to the activity of NIST reference sources. Accuracy must be within 10% of the current activity of each source.

3. Dose calibrator linearity: Dose calibrator systems will be tested upon installation and quarterly to be linear over the range of activities measured. The linearity must be within a 10% variance.

4. Dose calibrator constancy: Dose calibrator systems will be tested for constancy daily and prior to use. The measured activity of each isotope channel must be within 10% of the expected value.

5. Dose calibrator geometry: Dose calibrator systems will be tested for geometry independence and will be performed upon installation, if moved to a different location, and after repair using the similar syringe size and volumes utilized in radiopharmaceutical dose measurements.

6. Sodium iodide well counters and the uptake probe should be calibrated daily and tested for constancy before use with a NIST reference sources approved by the manufacturer.

7. Radioisotope efficiencies and Minimum Detectable Activity (MDA) for the well counter will be performed annually and after repair using appropriate NIST reference sources for the radionuclide energies being surveyed for wipe testing.

8. Chi-Square verification testing for well counters will be performed quarterly.

9. GM survey meters will be tested prior to each use by performing a battery check and a daily constancy check will be verified with the attached reference source. The measured rate must be within 10% of the activity noted on the calibration sticker for the probe used. All GM meters must be calibrated annually.

10. Glucometer testing will be performed daily with High/Low reference solution standards prior to use. Results out of range must be reported to Point of Care (POC) staff.

11. Nuclear Medicine and PET/CT imaging systems will have routine quality control testing performed in accordance with the manufacturer's specifications and the American College of Radiology (ACR) and Joint Commission standards. This includes daily, weekly, and quarterly testing performed by nuclear medicine personnel and an annual system performance evaluation performed by a certified medical physicist.

12. Routine preventative maintenance will be performed by a certified biomedical engineer or manufacturer Field Service Engineer (FSE) trained for that specific equipment.

Approved by: /s/ _____ Nathan Egbert, MD Assistant Professor & Deputy Clinical Service Chief 12/1/2024 _____ Date /s/ _____ Ryan Landis BSRT (R)(CT) Director, Radiology 12/1/2024 _____ Date *Review/Revision Completed by:* *Director, Radiology*	**Policies Superseded by This Policy:** • *None* Initial effective date: 10/31/2012 Review/Revision Date: 10/1/2015 10/1/2018 12/1/2021 12/1/2024 Next review date: 12/1/2027