

Nuclear Medicine – Testing of Gamma Camera, SPECT, and SPECT/CT Systems in a Clinical Environment

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The task of testing of gamma camera and SPECT systems can be daunting. The prescribed tests have accumulated over the years along with the ever increasing complexity of the instrumentation. How they are performed varies all over the place. Documents by NEMA and the IEC focus on standards for measuring the performance of these instruments by manufacturers and are difficult to translate to the clinic, if even possible. Prior AAPM Task Groups have tackled this problem and produced reports describing ways to accomplish the testing. This presentation will provide a comprehensive overview of the performance tests that can be and should be carried out on gamma camera systems installed in a clinic. The three areas covered are planar imaging, SPECT, and the relative new area of SPECT/CT imaging. The overview will include recommendations for tests to be performed at acceptance testing, annual physics surveys, and establishing a routine quality control program for the technologists to follow. Any series of recommended tests must also be completed in a timely fashion. It is believed that the recommended acceptance testing of a SPECT system can be completed in a single day and an annual survey be completed in one-half day of time. When the technologist is included in a comprehensive testing program, these time goals can be achieved.

Learning Objectives:

1. Become familiar with routine performance tests (daily, monthly, annual, ...) performed on gamma cameras, SPECT, and SPECT/CT systems.
2. Become knowledgeable of procedures and additional tests for trouble shooting problems.
3. Develop a quality assurance program for the nuclear medicine department that involves both the technologist and physicist.