

Objectives: Positron Emission Mammography (PEM) with F18-FDG has been useful in breast cancer diagnosis and characterization [1]. Clinical PEM scanners produce high resolution (2mm) PET images of immobilized breasts in 5-10 minutes. This allows the PEM scanner to guide breast interventions, with the help of a localization accessory including software for procedure planning and hardware for needle support. We report the development of a quality control procedure to test the performance of the accessory in a clinical setting on a daily basis.

Materials and Methods: A quality control procedure was designed to evaluate the functionality of the Stereo Navigator accessory to the PEM Flex PET Scanner (Naviscan PET Systems, Inc., San Diego, CA). During the procedure, 1 microCurie point source was placed in the field of view of the PEM scanner. PEM scan of the point source was performed. The software was used to select the point source as a target and guide a radioactive rod containing 0.1 microCurie/cm of Germanium-68 toward the source. A distance of less than 5mm from the tip of the rod to the point source was considered acceptable. A second PEM image was acquired, and regions of interest were used to verify the activities of the sources. To test the validity of the procedure, failures were introduced such as incompatible hardware/software and incorrect calibration rod activity. Time to perform the procedure was recorded.

Results: The procedure detects clinically-relevant failures and can be performed by a trained user in less than 5 minutes.

Conclusions: The quality control procedure for the localization accessory to the PEM scanner can be performed in clinically acceptable time.

1. Berg WA, et al. *Breast Journal* 2006; 12:309-323