

PET/CT

Combining Molecular Imaging with Computed Tomography (CT)

A PET/CT camera, known as a “hybrid camera”, is used for “fusion imaging” which describes nuclear medicine scans being superimposed, using software or hybrid cameras, on images from modalities such as CT or MRI to highlight the part of the body in which the radiopharmaceutical is concentrated. These systems produce images demonstrating an organ’s function superimposed on an image of the organ’s anatomy. This is known as co registration of structural and functional images. “Hybrid cameras” provide the most accurate information of the metabolic condition of the human body that has ever been achieved.

Why register images? PET images physiology in the body, for example, the radiopharmaceutical F18FDG, is taken up by tumor cells in the body. FDG is a sugar based pharmaceutical. Tumor cells take up more sugar than normal cells do and will produce areas of “uptake” on the images. CT provides high resolution images of the body’s anatomy. Alignment of a PET image with a high-resolution image such as a CT image has successfully allowed anatomical or structural context to be inferred from the coarser resolution PET image. The result is that the patient receives a far superior scan and the physician caring for the patient has superior information to base the treatment plan on.

How does the radioactive tracer get administered to the patient? The Nuclear Medicine Technologist is trained extensively in both didactic and clinical setting on injection techniques and radioactive isotopes. There is extensive knowledge required of all Nuclear Medicine students before they are introduced to the clinical setting. In the clinical setting, students are monitored closely and are required to successfully complete many competencies before they are able to inject patients independently. The primary reason for this is patient safety and comfort. Licensure ensures that all Nuclear Medicine Technologists will provide safe procedures to all patients.

Our goal is to create a safe, comfortable, teaching, environment for all patients who are in need of a PET/CT scan. If a person is scheduled for a PET/CT scan, it usually means they are either going through treatment for cancer or have just found out that they have cancer and are receiving an initial staging scan. Both situations can be devastating for patients and their families and we as part of their medical “support” team need to be fully competent and ready to care for these patients as if they were one of our own family members. Licensing Nuclear Medicine Technologists is necessary to the proper care of all patients, their families, and the physicians who care for these patients.