



## **What Is PET/CT?**

PET was developed nearly 30 years ago for research purposes and is now recognized as a powerful diagnostic tool in the fields of Oncology, Neurology and Cardiology. PET or Positron Emission Tomography is often referred to as 'functional imaging' and is an imaging technique that is different than conventional radiology exams, such as: X-ray, CT, Ultrasound or MRI. PET images contain information about tissue function and can provide important information that can affect the diagnosis and management of many diseases. The combination of PET and CT – hybrid or fusion imaging – provides remarkable accuracy. PET/CT is a powerful diagnostic tool that is having a significant impact on the diagnosis and treatment of many prevalent diseases and has been shown to be superior to PET alone. The ability to visualize human function with structure has had a dramatic impact on the way medical providers diagnose and manage patients.

PET/CT applications will continue to expand due to ongoing research in the fields of Oncology, Neurology and Cardiac abnormalities. The PENRAD PET/CT Center is a fixed site facility and is not a mobile unit.

## **How Does PET/CT Work?**

You can expect to be in the PET/CT center for approximately 2 - 3 hours. You will be asked to lie on a table that resembles a CT scanner with a larger opening. The table slowly moves in and out of the opening. To begin the procedure, you will be injected with a simple glucose (sugar) compound to which a small amount of radioactive tracer is attached. Although glucose is used by normal cells in the body, cancer cells tend to use more glucose than normal tissue. The radiation

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exposure associated with PET is similar to that associated with a conventional CT scan. After the injection you will wait approximately 60 to 90 minutes while the glucose is distributed throughout your body. This compound will collect in the various organs and tissues. The scanner records signals which are emitted by the glucose tracer after it collects in the organs. The PET computer turns the signals into actual images which are then fused with the anatomic images acquired by the CT scan.

### **What Are the Benefits of a PET/CT Scan?**

- PET/CT scans have the ability to merge anatomic and physiologic patient images
- PET/CT is used to diagnose and stage many cancers
- PET/CT scans can help diagnose many causes of dementia, for example, Alzheimer's
- PET/CT helps medical providers determine whether surgery may be necessary

### **How Is PET/CT Used?**

#### ***Oncology***

PET/CT is most beneficial in evaluating patients with known or suspected cancer. The new PET/CT systems have been shown to be highly accurate in the diagnosis, staging and restaging of cancer, and in monitoring the effects of therapy. PET/CT has become the standard of care for oncology imaging.

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**PET/CT is used in Oncology to:**

- Identify the location of tumors
- Determine if a tumor is malignant or benign
- Evaluate the effectiveness of cancer therapy
- Determine if a malignancy has spread
- Neurology

PET/CT can identify numerous neurological abnormalities in the brain from Alzheimer's disease to stroke evaluation to epilepsy. The ability of the PET/CT scan to aid in diagnosis at the onset of certain neurological disease courses can aid a physician in providing early treatment. PET/CT can also detect lesions in the brain that were not previously seen.

**PET/CT is used in Neurology to:**

- Evaluate dementia; e.g. – Pick's disease, Alzheimer's vs. Vascular dementia
- Localize seizure focus in patients with seizure disorders
- Evaluate extent of stroke and recovery following therapy
- Image malignant brain tumors
- Cardiology

Heart disease is the number one killer of American men and women today and cardiac PET applications will continue to expand due to increased research.

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**PET/CT is used in Cardiology to:**

- Identify coronary artery disease; measure blood circulation in the arteries of the heart
- Determine if the heart muscle is alive or dead
- Determine the benefits of a cardiac transplantation

**What Should I Do to Prepare?*****During Scheduling***

- Tell us if you think that you might be pregnant, or if you are a nursing mother
- Tell us if you are diabetic – special instructions will be necessary
- You will be asked to bring previous CT, MRI or PET films

***Patient Preparations***

- You must not eat or drink anything other than water for six hours prior to the exam
- Do not exercise for 24 hours prior to the exam
- Drink two glasses of water one hour prior to the exam
- Wear comfortable, warm clothing (e.g. sweatshirt & sweatpants), without zippers or any metal parts
- Wear your hearing aid, glasses or dentures
- Take any prescribed medications on the day of your test unless you are instructed not to do so
- Avoid all beverages with caffeine and sugar, including coffee and soda

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***After the PET/CT Exam***

A Board Certified Radiologist, with an additional Board Certification in Nuclear Medicine and specialty training in PET/CT, will interpret your study and provide a formal report for your permanent medical record.

The formal exam results will be sent to your referring healthcare provider, who will in turn discuss the results with you. At that time, your healthcare provider may recommend further testing, or suggest a treatment plan for your condition.

Please feel free to contact our facility or check with your healthcare provider for additional information.

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