

PET Center Core Facility: PET Overview Instructions/Patient Information

Overview of PET

Positron emission tomography (PET) has enhanced our understanding of the biochemical basis of normal and abnormal functions within the body. PET images are different than those from more conventional imaging equipment, such as x-ray, CT, Ultrasound, or MRI, because these images show what the tissues look like. PET images contain information about tissue function. PET uses unique radiopharmaceuticals, or "tracers," labeled with isotopes like carbon, oxygen, nitrogen and fluorine, which are the basic elements of biological substrates. These isotopes mimic natural substrates such as sugars (glucose), water, proteins, and oxygen. Once injected these tracers travel through your body emitting signals and quickly collects in the organs targeted for examination. If an area in an organ is abnormal, the signals will be stronger than in the surrounding tissue. A PET scanner records these signals and transforms them into pictures of chemistry and function. As a result, PET will often reveal more about the cellular-level metabolic status of a disease than other types of imaging modalities.

Current Applications

PET provides unique diagnostic information, which enhances a physician's ability to:

- ?? Diagnose disease before structural changes become detectable with anatomical imaging techniques, potentially improving the prognosis.
- ?? Manage patient therapy by monitoring response to a given regimen and providing early feedback on its efficacy. This can help reduce or avoid the cost of ineffective treatments or unnecessary hospitalization.
- ?? In some cases, replace multiple diagnostic procedures with a single exam.

- ?? Help predict the prognosis for surgical procedures, to eliminate those that won't benefit the patient, thus significantly reducing the cost of healthcare delivery.
 - ?? Identify distant, occult metastases that may affect the course of treatment and therefore change patient management.
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Patient preparation:

- ?? Do not eat or drink 6 hours prior to the scan (except water)
 - ?? Any medications should be taken with **water only**
 - ?? You can expect to be in the PET center from 2 – 3 hours.
 - ?? The actual scan itself takes approximately **1 hour**
 - ?? The PET center is located in Nuclear Medicine (Emory Hospital)
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The scan process:

1. To begin the procedure, a small amount of radioactive glucose (or similar tracer) is injected into your bloodstream.
2. After the injection, you will wait approximately an hour, while the injection material is distributed throughout your body.
3. Then, you will be asked to lie on a table that passes slowly through the scanner.
4. You should feel fine. There are no side effects from the injected tracer.

The studies are read shortly after the PET scan is completed and patients can expect reports to be available to their physicians the next day.

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