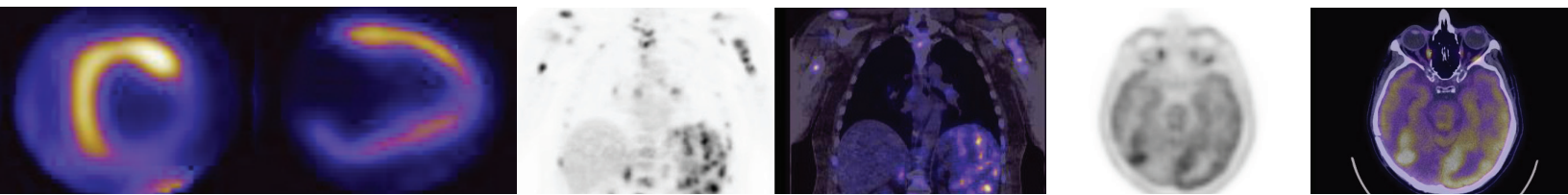


PET PROS

PET Professional Resources and Outreach Source



Nuclear Medicine: New World of Diagnosing and Treating Illness

Images the Body's Biological Processes

Nuclear medicine is a medical specialty that uses very small amounts of radioactive materials (radiopharmaceuticals) to diagnose, guide management and treat disease. Most nuclear medicine procedures are molecular imaging procedures that use radioactive substances. Molecular imaging procedures are highly effective, safe and painless diagnostic imaging and treatment tools that present physicians with a detailed view of what's going on inside an individual's body at the cellular level.

Molecular imaging/nuclear medicine specialists can safely, effectively and painlessly determine if certain organs, such as the heart, brain, kidneys, liver, thyroid and lungs, are working properly. A molecular imaging/nuclear medicine procedure commonly used in diagnosing and guiding treatment of cancer patients is PET/CT scanning (see also "PET/CT Scanning: Get the Facts").

When very small amounts of radioactive materials are introduced into the body by injection, swallowing or inhalation, specific body organs can be targeted. These trace radiopharmaceuticals are detected by special cameras that work with computers to provide pictures of an area of the body, offering information about an organ's physiology or function. The presence of disease is determined based on biological or molecular changes, rather than changes in anatomy. Radiopharmaceuticals go directly to the organ being targeted and are also used as treatment for hyperthyroidism, certain types of cancer such as thyroid and lymphoma, blood imbalances and pain relief for certain types of bone cancer.

Improves Patient Care

Today, molecular imaging and nuclear medicine offer procedures that are essential in many medical specialties, from pediatrics to cardiology to neurology to oncology. Molecular imaging and nuclear medicine procedures are an invaluable way to gather medical information that would otherwise be unavailable, require surgery or necessitate more expensive diagnostic tests.

These commonly performed biological imaging procedures are an integral part of patient care, identifying abnormalities very early in the progression of a disease—often before medical problems are apparent with other diagnostic tests. Early detection allows a disease to be treated when there may be a more successful prognosis.

Helps in Diagnosis and Treatment

In 2007, an estimated 16 million patients received nuclear medicine procedures in over 7,300 hospital and non-hospital sites in the United States, or approximately 68,000 patients daily (<http://www.imvinfo.com>). Nearly all hospitals—in addition to many clinics and private doctors' offices—perform nuclear medicine tests and scans. Safe, effective, painless and commonly performed procedures include positron emission tomography (PET) scans to diagnose and monitor treatment in cancer, cardiac stress tests to analyze heart function, bone scans for orthopedic injuries and lung scans for blood clots.

More than 100 different nuclear medicine imaging procedures are available, and every major organ system can be imaged. Nuclear medicine procedures are used in the diagnosis and evaluation of treatment of:

- Neurological diseases
 - Alzheimer's disease and dementias
 - Seizure disorders
- Coronary artery disease
- Many types of cancer
- Endocrine diseases
 - Thyroid
 - Parathyroid
 - Adrenal
- Gastrointestinal diseases
 - Stomach
 - Liver and gallbladder
- Genitourinary diseases
 - Kidneys
 - Bladder

- Testicles
- Pulmonary diseases
- Bone diseases
 - Trauma
- Infections

SNM and Nuclear Medicine

SNM is an international scientific and medical organization dedicated to raising public awareness about what molecular imaging is and how it can help provide patients with the best health care possible. SNM members specialize in molecular imaging, a vital element of today's medical practice that adds an additional dimension to diagnosis, changing the way common and devastating diseases are understood and treated.

SNM's more than 17,000 members set the standard for molecular imaging and nuclear medicine practice by creating guidelines, sharing information through journals and meetings and leading advocacy on key issues that affect molecular imaging and therapy research and practice. For more information, visit www.snm.org.