

Digital PET/CT: Driving Clinical Insights To Help Improve Care

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Digital PET/CT's key role in diagnosis, staging, and treatment follow-up is rapidly growing as innovations in the technology are bringing clinicians vast improvements in sensitivity, volumetric resolution, and quantitative accuracy. These advances offer the opportunity to manage dose, reduce scan times, and more accurately detect small lesions.

Philips' Vereos Digital PET/CT was designed to optimize the experience of every stakeholder, from patient, to technologist, to radiologist, and to provide the clinical insights needed to inform the care path and improve patient care. Clinicians are highly impressed with Vereos' ability to enhance small lesion detection in oncology and neurology, and to reduce the radiopharmaceutical dose needed for cardiology exams.

Setting a new standard with digital PET/CT

As healthcare continues transitioning toward outcomes-based reimbursement, responsibility falls on clinicians to provide clinically sound, cost-effective treatment. Faced with this challenge, providers are becoming more vigilant about replacing outdated imaging equipment in an effort to ensure long-term sustainability and competitive advantages. As a result, some

institutions are making the move to digital PET/CT.

The University of Vermont Medical Center (UVMMC), which draws patients from both Vermont and neighboring New York, recently needed to replace an aging PET/CT system. After evaluating the options, the UVMMC team selected Philips' Vereos Digital PET/CT. Jay Kikut, MD, Medical Director and Division Chief of Nuclear Medicine and PET/CT at UVMMC, recalled their decision-making process.

"We really had a bigger decision to make than just replacing outdated equipment," Dr. Kikut said. "We could have just replaced the old system with a similar, new system at a lower cost and move on, or consider investing in digital PET/CT, though the cost was higher. In the end, the investment in Vereos has given us a 50% improvement in sensitivity to detect and characterize small lesions. That's a very specific number."

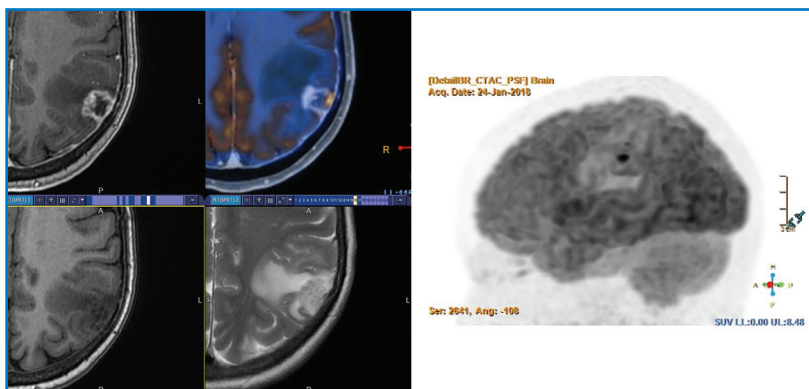
The clinical case for going digital

Accurate staging is critical to patient care in oncology and tied heavily to the clinician's ability to detect small lesions. Whether the path is surgery, chemotherapy, or radiation therapy, all treatments are expensive and they are all determined based on disease staging.



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Clinical history: Status post-stereotactic radiosurgery for oligo-metastatic lung cancer. MRI with contrast and F18 FDG PET/CT performed several days later. MRI, MRI fused with Ultra High Resolution 1x1x1 mm Vereos PET and MIP PET images. PET identifies metastatic dural deposits "missed" on the MRI. Dural metastases were confirmed on subsequent surgery.

At the Wellstar Kennestone Hospital cancer center in Atlanta, GA, Brian Gordon, MD, is pleased with the improved sensitivity offered by Philips' Vereos digital PET/CT and the technology's impact on his abilities. Dr. Gordon is a nuclear medicine physician and radiologist who practices at Kennestone, which is among the highest-volume PET/CT centers in the state. Dr. Gordon's expertise is in both PET/CT imaging and nuclear medicine therapies for various cancers including thyroid cancer, skeletal metastatic disease, and prostate cancer.

"We're finding more of the smaller lesions that are FDG-avid with digital technology," Dr. Gordon explained. "Second, when we see a smaller lesion that is not FDG-avid and the primary is very actively metabolic, we are more confident that it is not cancer. It's important that the negative predictive value is higher."

Dr. Kikut added, "The bottom line is that we are better at classifying our oncology patients for the optimal treatment and getting the most cost-effective utilization

of our services. You don't want to institute a treatment that's futile for the patient, because if the patient has metastases, then surgery might not be the patient's best option."

Digital PET/CT also positively impacts neurology. These small lesions are usually seen with MRI, but now they can be identified and diagnosed, while treatment is being followed with digital PET/CT.

"We have the ability to view to 1 millimeter pixel size because there is enough count density to be able to reduce the size while improving image quality," Dr. Kikut said. "In one case, there was an area of concern in the MRI that turned out to be negative, but an area that was not even recognized on the MRI was positive on the digital PET/CT scan, and the patient went for surgery."

Enhancing care while reducing PET dose

Reducing patient PET scan times can have a positive impact on image quality, patient comfort, and clinical throughput. The digital technology built into Vereos can help reduce scan times. Patients experience faster scans with minimal discomfort.

"If we evaluate all the aspects of a patient's care path, from the exam time to the comfort level during the scan to the physician's report, it's pretty exciting what nuclear medicine can do with Vereos technology," said Dr. Gordon. "For example, a traditional scan from the base of the skull to the lower pelvis or upper thigh region would take approximately 26-30 minutes. That same scan on the Vereos now takes about 16-18 minutes."



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In addition to completing scans faster, Dr. Kikut emphasized the importance of Vereos' ability to keep dose as low as possible.

"For our nuclear cardiology cases, we're focused on reducing radiopharmaceutical dose for our patients while providing them the highest quality of care," he said. "The system allows us to complete an exam and then reconstruct the images to how they would look if the dose was reduced by 25%. We have a dose schedule that's dependent on the patient's size, but we're hoping to lower the dose 25% across the board. For some indications, a higher dose may be needed, but many physicians are interested in lowering doses for these patients. Many cardiology patients may actually have a normal exam, so being dose conscious is extremely important."

Dr. Kikut explained these dose reductions can also be employed in oncology for certain patients with highly metabolically active lesions, or for patients expected to make a full recovery.

The future is digital

The technological advantages gained from using digital PET/CT over traditional analog systems are allowing clinicians to better detect and characterize small lesions in oncology that can change patient management and potentially improve outcomes. This innovative technology also allows clinicians to reduce the PET dose needed for many exams, especially in cardiology. As the industry steadily moves toward value-based care, Vereos digital PET/CT is driving clinical insights so clinicians can continue to improve patient care.



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