



For Immediate Release

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Nuclear Medicine Project: Injection Quality Varies Widely, Can Be Improved

Quality of Resulting PET/CT Image Depends on Center and Technologist Performing Radiopharmaceutical Injection

CARY, NC – The Journal of Nuclear Medicine Technology [published ahead of print the results of “Lara QI”](#) – the world’s largest quality improvement project on the radiotracer injection process for PET/CT patients. The project found that the quality of injections – critical for accuracy of staging and monitoring cancer – varies significantly between centers and technologists, but can also be significantly improved.

The Lara-QI principal investigators are David W. Townsend, Ph.D., co-inventor of the PET/CT scanner and Terence Z. Wong, M.D., Ph.D., Professor of Radiology and Division Chief, Nuclear Medicine at Duke University School of Medicine.

“Imaging centers at MD Anderson, UCLA, the University of Tennessee Medical Center, Wake Radiology Services, Carilion New River Mobile, Wake Forest University, and Carilion Memorial Hospital participated in the project, were excellent partners, and were all focused on improving patient care,” said Ron Lattanze, CEO of Lucerno Dynamics, LLC, a privately-held medical device company. “What we learned at these prestigious sites applies across all nuclear medicine centers.”

BASICS OF NUCLEAR MEDICINE AND INFILTRATIONS

Before undergoing a PET/CT scan, usually to stage or track the progression of a cancer, a small dose of radiotracer is injected all at once into a patient’s vein. The tracer circulates through the body during an uptake period and allows the PET/CT scanner to capture functional information about the primary tumor and any metastatic disease. An “infiltration” results when some or all of the injected tracer misses the vein and fails to enter the circulation. Infiltrating a dose can negatively affect the quantification and quality of the image and often can go unnoticed.

RESULTS OF PROJECT

The Lara-QI project used Lucerno Dynamics technology to monitor 5,541 PET/CT injections. During the Lara-QI Measure Phase, 2,439 injections were observed and infiltration rates at centers ranged from 2%-16%. The results may even be understated due to the “observer effect”; technologists were trained in advance on injection quality and knew each injection was being monitored. Four centers also used the

Lara® System analytics to help develop quality improvement plans and saw significant rate improvement in 1,349 injections. An additional 1,763 monitored injections showed that results were sustained.

Dr. Townsend noted, “it is highly important to control and assess the quality of the PET/CT scan, especially when there are implications for monitoring therapy response and patient management. Even though not all infiltrations will matter clinically, if the Lucerno Lara® System can simply and non-invasively help physicians identify infiltrations that do matter, why wouldn’t one use it?”

PUBLIC POLICY

Nuclear medicine imaging centers are currently not required to report infiltrations as a result of a 1980 Nuclear Regulatory Commission (NRC) policy, that suggests infiltrations are “virtually impossible to avoid.” Lucerno Dynamics has been working with NRC and its Advisory Committee on the Medical Use of Isotopes (ACMUI) to update this policy.

“NRC and the ACMUI have been extremely responsive and interested in considering a revision of this 39-year-old policy,” said Lattanze. “Some infiltrations not only affect the quality of the nuclear medicine image, but also result in unintended radiation exposure to patients’ tissue that exceeds NRC’s reporting limits. We think that infiltrations that exceed these limits should be reported. This will encourage nuclear medicine centers to monitor and improve their injection processes and lead to improved patient care and safety.”

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