

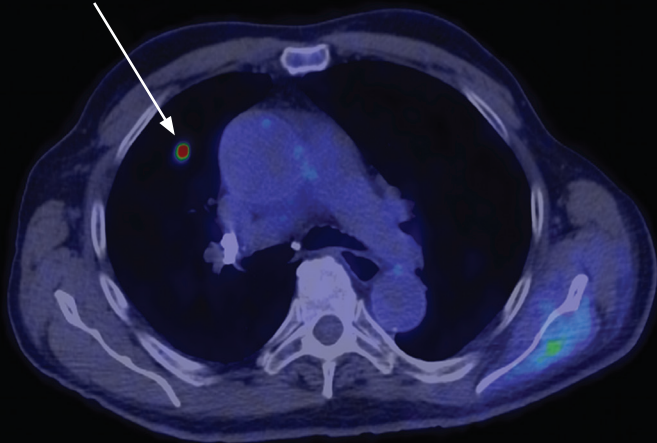
Q.Clear

2x improvement in image quality_(SNR)

2x improvement in PET quantitation accuracy_(SUV_{mean})



QSUV_{max} - 12 g/ml



92%

of medical oncologists say that if SUVs could be more accurately measured and understood, it would likely improve clarity and conclusiveness of the PET scan.‡

Revolutionary Q.Clear Technology

Q.Clear offers full-convergence PET reconstruction that not only provides excellent image quality for small lesion detectability to enable fast and efficient reading for a more confident diagnosis, it also delivers consistent and accurate quantitative measurements that are important in helping you determine as early as possible how well your treatment plan is working.

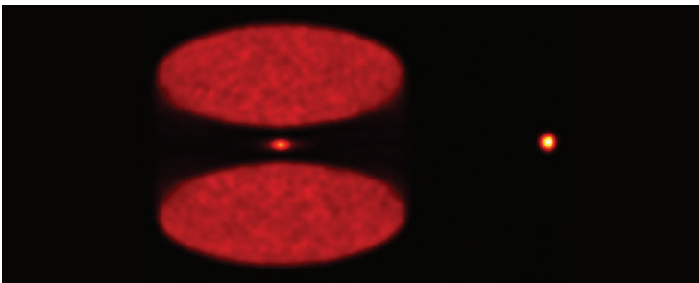
To achieve full convergence during reconstruction, a great number of iterations are required; however, more iterations increase image noise. As illustrated in the images below, this presents a trade-off between full convergence and image quality when using today's conventional reconstruction technology.

Additionally, the accuracy of quantitative imaging in PET is compromised by the necessary under convergence in conventional reconstruction to control image noise. Unfortunately, this is detrimental to clinicians like you that are striving to both properly stage and follow disease.

Consistency and accuracy in PET quantitation are critical to your patient's entire care path, especially when more than 70% of cancer patients do not respond to their first course of chemotherapy. One form of measurement response is SUV, standard uptake value. The SUV measurement obtained when using Q.Clear technology is known as **Q.SUV**, so it is immediately recognized as a more accurate and consistent measurement than can be provided by conventional methods.

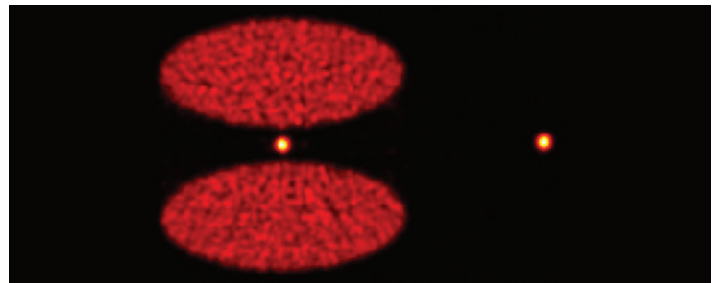
Partial Convergence

2 Iterations, 10 Subsets



Full Convergence

25 Iterations, 10 Subsets



Phantom simulation demonstrating the effects of convergence. The image on the left is reconstructed with two iterations of OSEM; on the right, 25 iterations. Note the spatial distortion and loss of counts in the indicated feature at 2 iterations.

For the first time in PET reconstruction, Q.Clear technology considers all aspects of the imaging chain, incorporating prior knowledge about image quality into an additional term of the algorithm that discourages differences in neighboring image voxel values and decreases image noise. This factor allows the algorithm to run to full convergence, making the **Q.SUVs** consistently accurate. Based on feedback GE has received to date, the oncology community welcomes **Q.SUVs** and will expect to see them in PET reports.

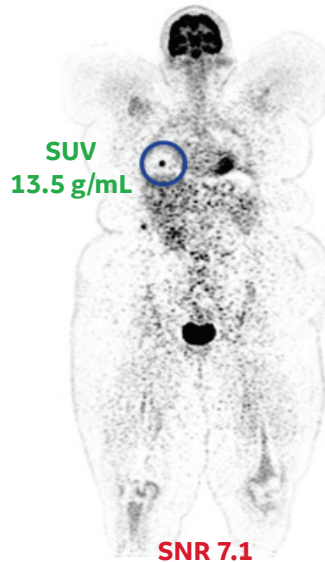
Conventional PET Reconstruction Technology

(OSEM, TOF)

2 iterations



25 iterations



Q. Clear

25 iterations



Please visit www.gehealthcare.com/qclear for more information.

Bringing Real Value to PET

“In my opinion, Q.Clear significantly reduced the image noise in the liver, in this case, and allowed a fast and more accurate quantitative SUV measurement and evaluation of disease.” - **Dr. B. Sah, Universität Zürich**

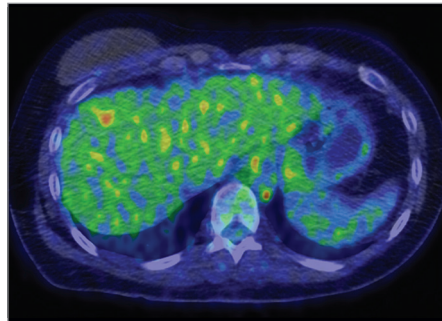
History: Breast cancer restaging post chemotherapy.

Scan Time: 2 min/bed

Dose: 8.1 mCi

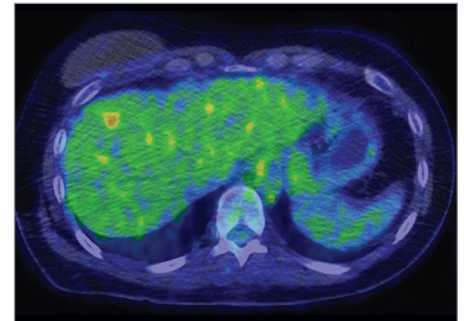
BMI: 24.1

Conventional Technology



SUV_{max} 5.28 g/ml

Q.Clear⁵



Q.SUV_{max} 5.15 g/ml

“The Q.Clear images provided superior quantitation of SUV_{max} with enhanced definition of small FDG-avid abnormalities. In my opinion, this advantage would give us greater diagnostic confidence in the assessment of small FDG-avid pulmonary nodules, in this case” - **Prof. Fergus Gleeson, Churchill Hospital, Oxford UK**

History: PET/CT for subcentimeter right upper lobe pulmonary nodules on end-of-chemotherapy CT following sigmoid carcinoma resection.

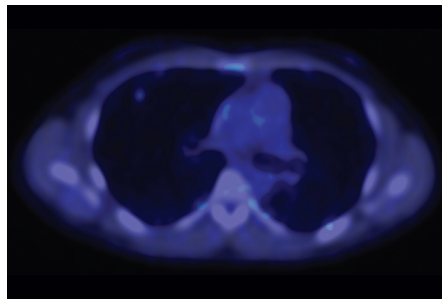
Scan Time: 4 min/bed

Dose: 9.3 mCi

BMI: 26.8

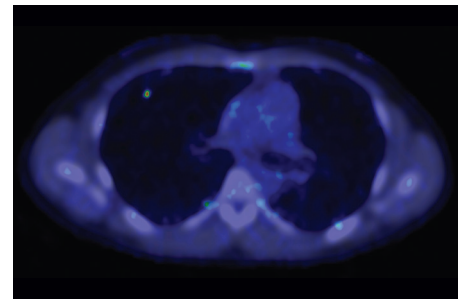
CT Scan: low dose CT scan with Q.AC (quantitative attenuation consistency)

Conventional Technology

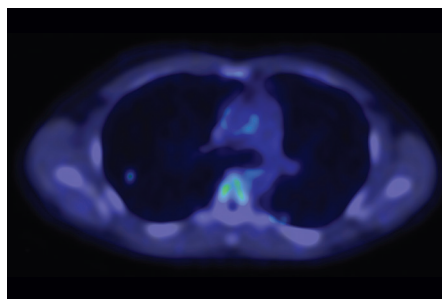


SUV_{max}: 2.29

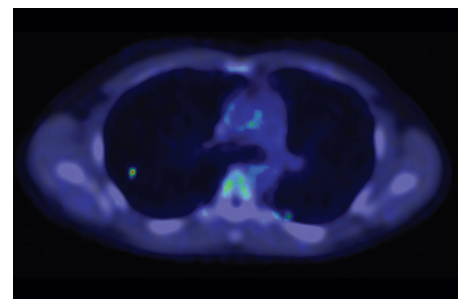
Q.Clear⁵



Q.SUV_{max}: 6.0



SUV_{max}: 2.85



Q.SUV_{max} 5.55

Value of Q.Clear

No trade-off between quantitation and image quality provides optimal conditions for longitudinal scan comparison and detectability of smaller lesions.

Enhanced PET image quality reduces ambiguous tumor characteristics and increases lesion detectability, leading to more efficient readings and quicker action to combat growth.

Fully-converged images decrease variability between scans and increase accuracy and reliability of SUVs, enabling both confident diagnosis and precise treatment response assessment.

Tracer compatibility for all currently utilized PET/CT care areas helps deliver exceptional care to the most patients regardless of their condition.

Please visit www.gehealthcare.com/qclear for more information.



About GE Healthcare

GE Healthcare provides transformational medical technologies and services that are shaping a new age of patient care.

Our broad expertise in medical imaging and information technologies, medical diagnostics, patient monitoring systems, drug discovery, biopharmaceutical manufacturing technologies, performance improvement and performance solutions services help our customers to deliver better care to more people around the world at a lower cost.

In addition, we partner with healthcare leaders, striving to leverage the global policy change necessary to implement a successful shift to sustainable healthcare systems.

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Imagination at work

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¹Double-blinded survey with 100 medical oncologists conducted by ITG Market Research for GE Healthcare.

²Q.Clear images were retroactively reconstructed at GE Healthcare and were not used for diagnosis or treatment.