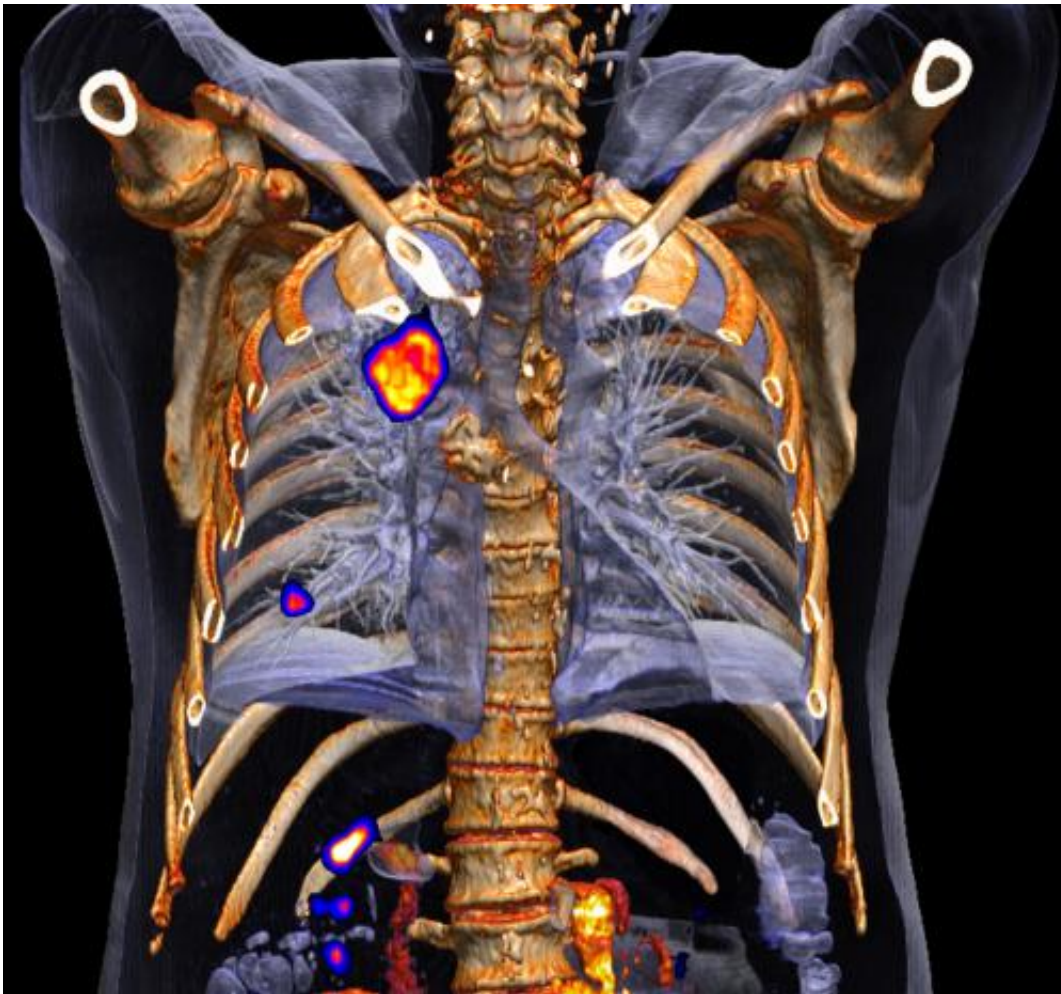


# Non-stop PET/CT scan provides accurate images

September 18 2014

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The new Biograph mCT Flow from Siemens Healthcare is the first positron emission tomography/computed tomography (PET/CT) system that moves the patient through the gantry while continuously acquiring PET data, instead of using sequential static acquisitions. The system's new FlowMotion technology allows physicians to define imaging protocols based on the requirements of the scanned organ. This can improve image quality and provide the physician with

more details about the severity of a lesion.

Siemens is improving PET/CT imaging and data quality while reducing radiation exposure. The Biograph mCT Flow PET/CT scanner is a new positron emission tomography/computed tomography (PET/CT) system that, for the first time ever, overcomes the limitations of conventional bed-based PET/CT with FlowMotion, a revolutionary technology that moves the patient smoothly through the system's gantry, while continuously acquiring PET data.

Until now, with conventional PET/CT scanners, planning and scanning was limited to the fixed size of the system's detector field of view (FOV) for each bed position. While the adjustment of scan parameters in clinical stop-and-go PET/CT protocols is technically possible, the complexity of adjustment has limited its routine use. With Biograph mCT Flow, physicians can plan the exam based on an individual organ's needs, adjusting parameters like speed, resolution and motion management to the precise dimensions of organs and routinely incorporating them into a single scan for every patient.

On a PET examination, the patient is injected with a small amount of radioactive material. This concentrates in the tissues of interest, and the PET scanner detects its distribution over the patient's body to determine various metabolic and physiological functions. In the PET/CT scanner, the PET data is overlaid with high-precision 3D CT images to determine the precise location of the tumor.

The amount of tracer uptake can also be determined more accurately with Biograph mCT Flow. Conventional PET/CT suffers from degradation from the center to the edge of the axial FOV. Overlapping sequential bed positions are used to compensate for this constraint, but

this approach can lead to axially varying noise sensitivity if there is not enough overlap. By continuously moving the patient through the detection system, FlowMotion technology eliminates overlapping bed acquisitions and maintains uniform noise sensitivity across the entire scan.



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Faster [data storage systems](#) were required, however, before PET data could be continuously recorded while the patient passed through the system. Instead of the traditional hard drives, Siemens Healthcare uses high-speed Solid State Drives (SSD) in Biograph mCT Flow. The algorithms for image reconstruction, which previously processed static individual images, had to be updated and replaced with dynamic data processing procedures. The table is equipped with a magnetic drive that enables the speed to be adjusted so precisely that the patient is positioned with an accuracy of less than one millimeter.

FlowMotion technology enables physicians to accurately set the start and end of a PET/CT scan and incorporate gating and high-resolution in one single examination. It also allows to precisely select the scan range to a single organ of interest, eliminating over-scanning and the associated CT dose, which enables the dose to be reduced by up to 32 percent. Biograph mCT Flow also uses TrueV technology to expand the field of view of the PET detectors. Either the dose of radioactive markers can be reduced or the duration of the scan can be shortened as a result.

Provided by Siemens

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