

MRI: Postcontrast sagittal T1-weighted image with fat saturation shows two spiculated masses in the upper quadrant and segmental enhancement in the lower quadrant.

## Breast MRI

At the Hong Kong Sanatorium and Hospital in China, Gladys Lo, MD, and Polly Sy Cheung, MD, have been performing breast magnetic resonance imaging (MRI) examinations since November 2005 with a 3 Tesla MRI scanner. Breast MRI has been available for over a decade, but it has only recently become recognized as a vital complement to breast examination after mammography or ultrasound. The research in Hong Kong supports this shift and helps illustrate how MRI examinations can help change clinical management. Reasons for the recent reassessment include the fact that breast MRI protocols are approaching standardization and the MRI breast-biopsy devices are now commercially available. Additionally, the high-resolution images can be obtained with both 1.5 Tesla and 3 Tesla scanners. With an average examination time of less than 30 minutes, MRI is also an efficient workflow solution. Although MRI is not yet the routine procedure before breast cancer surgery, it may prove to be a useful adjunct in preoperative assessment in young breast cancer patients who often have denser breast tissue and whose mammography is thus much less accurate. In Siemens MRI magazine *MAGNETOM Flash*, Lo and Cheung present two cases where MRI examinations have enhanced breast screening. They highlight its use for patients with fibrocystic breast change, which shows multiple indeterminate shadows with ultrasound. They also investigated its use when discordant clinical, mammographic, and ultrasound findings appear, and how MRI can provide more information in these situations for breast cancer assessment.

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## Seamless Imaging in Cancer Staging

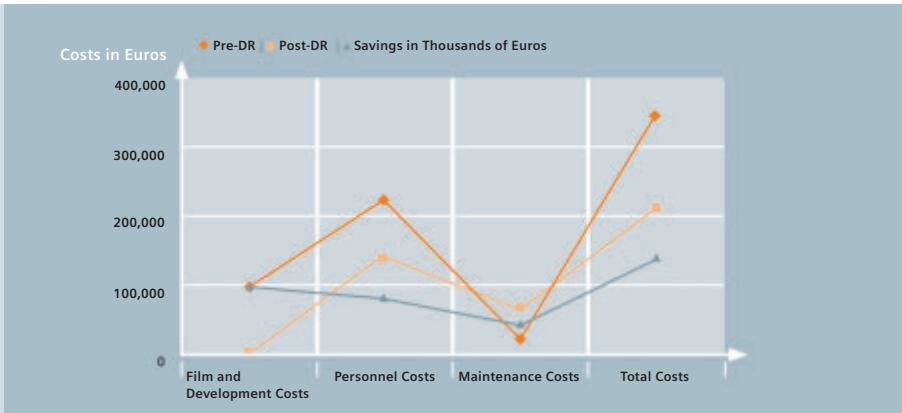
In addition to the article on *syngo*® TimCT Oncology in the December 2007 issue of *Medical Solutions*, Siemens magnetic resonance imaging (MRI) magazine, *MAGNETOM Flash* has now published patient cases from the Department of Diagnostic Radiology at University Hospital Freiburg in Germany. The innovative technology – a hardware and software solution – enables patients to be scanned in one step, from head to toe. Thanks to its Continuous Table move, *syngo* TimCT Oncology revolutionizes axial MR imaging.

In an MRI-exam using *syngo* TimCT Oncology, the patient slowly slides through the magnet tunnel on a continuously moving table. The system's software, online reconstruction, and technical refinements helps to minimize artifacts. Additionally, *syngo* TimCT Oncology delivers not only striking image quality, but also workflow benefits with its time-saving features thanks to seamless, whole-body imaging capabilities. The technique is also easily applicable and effective for local tumor and cancer staging. At the University Hospital Freiburg, investigations have highlighted the high diagnostic accuracy of the procedure, which the department has been using since the end of 2005 for whole-body staging of rectal cancer, gynecologic malignancies, prostate cancer, breast cancer, lung cancer, gastrointestinal stromal tumors (GIST), plasmacytoma, lymphomas, and for diagnostic work-up of patients with Crohn's disease.

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As compared to conventional multistep scanning, Continuous Table move provides whole-body imaging.



Film, development, staff, and maintenance costs: pre-digital radiography (DR) versus post-DR



## Increasing Efficiency in Radiography with the Digital X-ray System

With the addition of two AXIOM® Aristos FX digital radiography systems, the Kaiser Franz Josef Hospital in Vienna, Austria, has seen an increase in cost efficiency, patient throughput, and clinical workflow. Thanks to the reduction in work steps and associated time savings with the system's flat detector, the facility achieved savings of nearly €140,000 in 2005. The digitalization of the X-ray department also contributed to shortening the time needed for diagnostic and treatment decision making. AXIOM Aristos FX systems allow acquisition of all radiographic images in a single room, without having to move the patient to another room for different exams.

This resulted in a reduction from 50 minutes to 20 minutes door-to-door time in some cases, thus cutting wait times from 30 minutes to less than 10 minutes. With up to 46 percent fewer personnel and 50 percent less space, the hospital is able to acquire more images per month than with analog systems.

### Staff Satisfaction and Efficiency

Digital technology eliminates changing and developing cassettes, preparing preliminary images, labling the X-ray envelope, and viewing the images on the light box. University lecturer Wolfgang Kumpan, MD, is convinced that the reduction in the number of required worksteps

and associated time savings achieved with the AXIOM Aristos FX systems are principle reasons for the improvement of workflow in their radiology department.

Additionally, the improvements have helped to boost staff satisfaction and efficiency, with a reduction in the total daily work schedule from 33 hours in four analog rooms to 23 hours in two digital rooms in 2005, as physical labor for the staff was also greatly reduced.

[www.siemens.com/AXIOM-2008-Efficiency](http://www.siemens.com/AXIOM-2008-Efficiency)

## Proactive Tube Failure Prediction

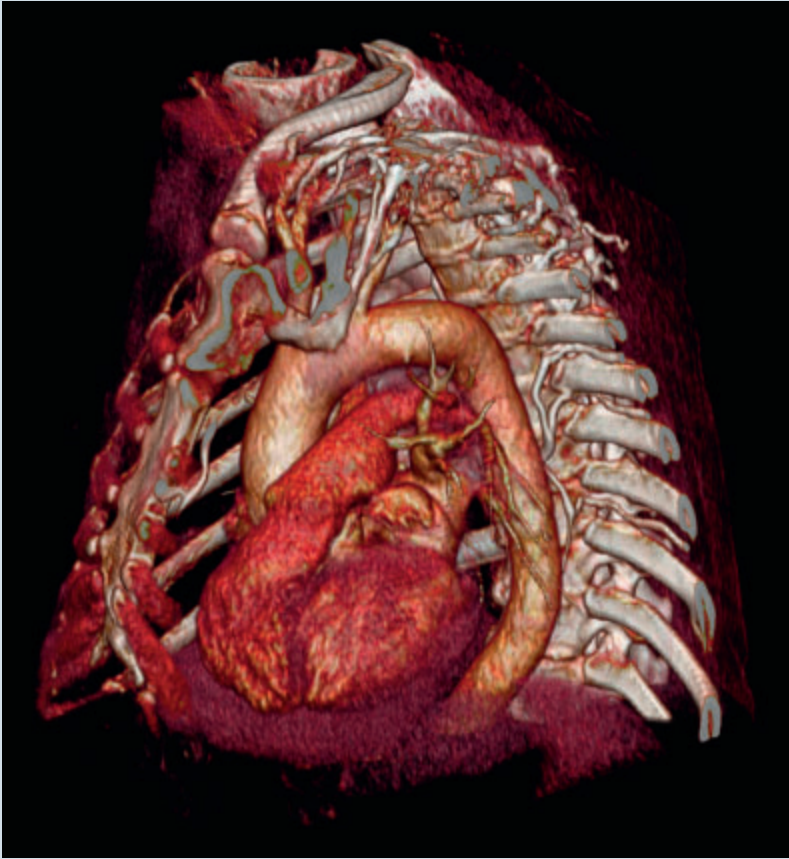
Computed tomography (CT) systems are critical for clinical diagnosis and indispensable in trauma situations. Therefore, system reliability is vital, and failure can mean a complete disruption in clinical workflow. The CT tube system, a significant part of the equipment, has a limited life span and is key to system availability and image quality. Because it receives varying amounts of use, tube failure has been virtually unpredictable – until now. The Siemens Guardian Program™ (see

page 68) including TubeGuard makes it possible to predict tube failure in advance – proactively and efficiently. The TubeGuard plan, designed specifically for the SOMATOM® Definition family, is the world's first solution that helps predict tube failure before it could cause unplanned workflow disruption. Tube replacement before failure enables a high patient throughput and the highest quality care. Sensors observe possible failures via real-time data flow with Siemens

Remote Service. The information gathered there is analyzed through Siemens engineers, who develop a plan of how to address the situation. This includes scheduling service and delivery of the new tube at the most convenient time for the facility in order to not disrupt workflow.

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# SOMATOM Definition AS: Strength and Flexibility



SOMATOM Definition AS provides excellent image quality: routine scan over an aortic arch.  
Courtesy of University of Erlangen-Nuremberg, Erlangen, Germany

With the SOMATOM® Definition AS\* computed tomography (CT) scanner, Siemens is expanding the clinical applications of CT, enabling successful imaging even of the most challenging patients while reducing radiation dose, improving the precision of interventional procedures, and streamlining workflow. SOMATOM Definition AS is proving its mettle in even the most challenging patients. A gantry rotation time of 300 milliseconds – the best available in single-source CT scanners – and a 128-slice detector make it ideal for cardiac imaging. A patient table that supports up to 660 pounds, a gantry 78 centimeter in diameter, and tube power that can be increased to 100 kilowatts if needed all

eliminate obesity as a barrier to care. One of the most exciting applications of SOMATOM Definition AS is whole-organ CT perfusion imaging. For example, whole-brain perfusion imaging enables a far more complete assessment of the size of a stroke, allowing clinicians to quickly decide whether to initiate ‘clot-busting’ therapy. The scanner’s ability to add a fourth dimension – time – to CT examinations also makes dynamic CT angiography possible.

At the University Hospital Munich-Großhadern, Germany, radiologists applaud the scanner for its flexibility and broad range of use. They have experienced safer and faster interventions thanks to SOMATOM Definition AS. Real-time 3D

guidance enables the interventionalist to reconstruct images in any direction or view and to visualize the biopsy needle in the context of the entire organ. Just about an hour away, Michael Lell, MD, Assistant Professor of Radiology at the University Hospital in Erlangen, can also attest to the benefits of the scanner: “We reduce the amount of time we need per intervention. We can increase the volume of interventions we do. We can do our interventions more safely than we used to. And the 3D tool allows us to navigate to the lesions more easily.” In Tournai, Belgium, the Department of Radiology at Clinique Notre Dame has also experienced success with the system and greatly improved departmental workflow. Jacques Kirsch, MD, Head of the Department, states, “We were able to process all scheduled 75 patients by the end of our working day and did not have to cancel any of the appointments. It was simply amazing. SOMATOM Definition AS can cope with eight instead of the average six patients per hour – this means a huge increase in efficiency.”

Across the pond, at the Medical University of South Carolina, Charleston, SC, USA, Joseph Schoepf, MD, is also impressed with the scanner’s versatility. Accurate visualization of complex neurological disorders or injuries and precise differentiation of tumor are among the many challenges that can be easily addressed by SOMATOM Definition AS. He describes it as “an extremely powerful all-around scanner that excels in a wide range of challenging applications.”

\*Status at editorial deadline: Future 510(k). The information about this product is provided for planning purposes. The product requires 510(k) review and is not commercially available in the U.S.

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