Combining Efficiency, Research, and Patient Care

The new generation of Siemens magnetic resonance systems serves the demands of modern hospital care by combining attractive features for patients with user-friendly technology for hospital staff. The University Medical Center Mannheim, Medical Faculty Mannheim, Germany, was the first hospital in the world to test the advantages of MAGNETOM Skyra.

By Annette Tuffs, PhD

Today, successful academic medicine is about achieving the highest efficiency, quality, and cutting-edge innovation – all while striving for maximum patient comfort and satisfaction. To fulfill such diverse requirements demands both technological advancement and clinical expertise. The first installation of MAGNETOM® Skyra, Siemens’ latest 3 Tesla magnetic resonance imaging (MRI) system, at the University Medical Center Mannheim went a long way toward reaching these ambitious goals. The facility was the first in the world to be granted access to this groundbreaking top equipment. “We are honored to have been chosen as a partner,” says Professor Stefan Schönberg, MD, Director of the hospital’s Institute for Clinical Radiology and Nuclear Medicine.

The Medical Faculty Mannheim, part of Heidelberg University, has an excellent reputation for oncology and medical technology. It is also home to the Institute for Clinical Radiology and Nuclear Medicine, where state-of-the-art equipment provides the highest diagnostic standards to several thousand patients each year.

Increasingly Competitive Hospital Market

With mounting economic pressure on hospitals, fixed budgets for medical care in Germany, and the higher demands of an increasingly competitive hospital market, modern diagnostic equipment is one of the cornerstones needed to ensure a hospital’s high-standard patient services and reputation while maintaining top-notch access to translational MRI research. The new Siemens MAGNETOM Skyra and MAGNETOM Aera (1.5 Tesla) systems combine visible high-standard patient care with efficiency and technical innovations. The introduction of Tim® 4G (Total imaging matrix) technology and Dot™ (Day optimizing throughput) engine with MAGNETOM Skyra and MAGNETOM Aera makes important contributions to enhancing the productivity of imaging procedures, not only improving quality, but also increasing patient throughput and therefore, the overall economy of an imaging department. At the same time, Tim’s 4th generation (Tim 4G), with up to 204 coil elements and up to 128 receive channels, allows further scientific developments for higher temporal and spatial resolution as well as anatomic coverage. The DirectConnect cableless or SlideConnect coils are easy and fast to handle and allow flexible combinations of multiple coils, offering parallel imaging in all directions and therefore, major advantages in orthopedic, neurologic, oncologic, and angiographic imaging. Additionally, the Tim coils allow the complete anatomy to be

Through the integration of Tim and Dot, MAGNETOM Skyra sets a new standard of efficiency and top-notch research. The open space and the friendly design is enhanced by the option of a pleasant “Illumination MoodLight” atmosphere.
Imaging greatly profits from Dot’s special automation and guidance workflow features. Measuring processes are automated and, through complex control mechanisms, presented in small portions, making interruptions of the imaging process unnecessary and therefore, saving time. “It has the advantages of an automatic gear box,” says Michaely. “Changing gears is unnecessary, but we stay at the wheel and decide where to drive and which scientific and clinical studies to perform.”

At the same time, Dot interacts with the examiner by asking specific questions at critical stages of the examination. “There is a complete overview over all parameters, and useful advice is given for arranging the imaging process.”

The University Medical Center Mannheim is currently using Brain Dot Engine and Abdomen Dot Engine with their own protocols. Michaely compares Dot to the autopilot system of an airplane: “The pilot can rely on it, but at the same time, has to be aware of complex situations, such as in high-end clinical and research applications. These situations demand his or her attention.”

MAGNETOM Skyra was tested in a scientific study: 100 patients who underwent MRI examinations at University Medical Center Mannheim had volunteered for an extra scan with the new device, with and without applying the Dot engine, giving radiologists the opportunity to test the new equipment and compare results. “Our initial experience shows that the images are exceptional, and the handling of the system and the patient will make MRI diagnostics much more efficient in the future. Thus, this opens the horizon for further integration of cutting-edge scientific developments into clinical routine,” says Schönberg. One of the next steps will be to make the system comparable between different academic hospitals, which will then put radiological imaging on another level.

Open Bore Offers Breathing Room

Another advantage of the new generation of MRI scanners is the reduced room space needed for hardware and the device...
Magnetic Resonance Imaging

Challenge:
• Improve quality of MRI images
• Plan MRI scanning as part of an individual treatment
• Make MRI scanning a more patient-friendly procedure
• Test and establish the latest and most efficient MRI technology
• Take efficiency and patient processing into consideration
• Integrate cutting-edge scientific developments into clinical routine more easily

Solution:
• Utilize the Dot (Day optimizing throughput) engine
• Implement Tim (Total imaging matrix) technology
• Use MRI devices with Open Bore and soothing Illumination MoodLight
• Connect MRI technology with hospital data systems
• Make scanning easier and less stressful with mobile tables and light coils
• Establish a scientific study with patients undergoing extra scans voluntarily

Result:
• Shorter MRI scanning times and higher patient throughput
• Patients more likely to undergo MRI scans
• Consistently high image quality with Tim and Dot because of improved patient cooperation and improved coil technology
• Higher number of patients with previously limited access to MRI technology (children, obese patients, ICU patients) can be scanned
• More comprehensive morphologic and functional information

Summary

Annette Tuffs, PhD, is a German medical journalist based in Heidelberg. The former medical editor of the daily newspaper Die Welt has contributed to the Lancet and the British Medical Journal since 1990.

Further Information
www.siemens.com/mri-productivity

“Workflow and image quality have been greatly improved.”

Henrik Michaely, MD, Associate Professor of Radiology, Section Chief Vascular and Abdominal Radiology, Institute for Clinical Radiology and Nuclear Medicine, University Medical Center Mannheim, Medical Faculty Mannheim, Heidelberg University, Mannheim, Germany

1 The safety of imaging fetuses/infants has not been established.