

# A Tale of Two Upgrades

## Addenbrooke's Hospital, Cambridge, UK

In January 2006, the Cambridge University Hospitals NHS Trust, Addenbrooke's Hospital reached the end of an era. The longest serving of the facility's four GE 1.5T systems – the MRSO3 – was ramped down in preparation for de-installation. This system was originally installed on October 24, 1993 and faithfully served the department and hospital with high-quality images since that time.

As a testament to the longevity and upgradeability of GE Healthcare's MR systems, the system was upgraded four times during its 12 years of service life. Each upgrade enabled the system to continue providing state-of-the-art clinical applications and great image quality for the radiologists at Addenbrooke's.

The system started as a 4X system with the best imaging applications available at that time. The system became a 5X a few years later and subsequently was upgraded to an LX. Each upgrade brought significant patient benefits with faster imaging speed and higher resolution, plus added phased array technology, faster reconstruction and improved coils. The LX upgrade brought the change from touch sensitive plasma screen to an Octane host computer with a mouse-driven graphic interface. The ever expanding applications also covered more modern scanning techniques such as breast imaging.

In 2001, MRSO3 was one of the first systems to receive an upgrade to the EXCITE platform. This major upgrade was carried out with the direct assistance of Milwaukee engineering and proved a great success, ushering in the era of multi-channel imaging and parallel imaging, or ASSET™.

Although image quality was at an all time high, the frenetic pace of change continued with the final metamorphosis to the HD platform in 2003. In this final incarnation, this MR system was the most technologically advanced, despite being by far the oldest system in use at the Addenbrooke's hospital. It remained in operation until the arrival in January of the new GE Signa® HD 3.0T MR, purchased to replace this unit.

During its long life, MRSO3 with four upgrades was in operation for 4,293 days and, most important, imaged almost 50,000 grateful patients.

### About Addenbrooke's Hospital

Addenbrooke's, part of Cambridge University Hospitals NHS Foundation Trust, is a local teaching hospital for the University of Cambridge, a center for specialist services and a leader in research and development. With approximately 1,100 beds, the facility employs over 6,500 staff dedicated to the provision of a wide range of clinical and non-clinical services.

The Trust's '2020 vision' is a series of proposals designed to develop Addenbrooke's as a major center for treatment and research on a European scale. The Trust is a leading international center for biomedical research and medical education, and shares its site with the University of Cambridge, the Medical Research Council, the Wellcome Trust, the British Heart Foundation and Glaxo SmithKline.

The Hospital is a national and regional center for cancer services, liver transplants, organ transplantation, neurosciences and genetics; for example 85 kidney transplants were performed in 2001.



Sharp hired Tom Fagan, an artist, to paint a mural on the center's GE MR scanner, recently upgraded to a Signa HD system.

## Sharp and Children's MRI Center, San Diego, CA

In 1991, Sharp and Children's MRI Center, part of Sharp Memorial Hospital, installed a GE 1.5T long bore 4x MR scanner in the facility to complement the center's first MR scanner, which was purchased in 1986. "At that time, this GE MR scanner was considered state-of-the-art," said Russell Low, M.D., medical director, who began his tenure at the facility at the same time following a fellowship in body imaging at Stanford Medical Center.

### About Sharp Memorial Hospital

Sharp Memorial Hospital is the largest Sharp HealthCare hospital and is a designated trauma center for San Diego County. Located in Kearny Mesa, it maintains 341 acute-care beds, including 35 beds for critical care services. The hospital is especially known for outstanding programs in cardiac and vascular care, cancer treatment, pulmonary care services, rehabilitation, women's health and multi-organ transplantation. Sharp Memorial also offers extensive outpatient services and prevention programs in support of Sharp's overall emphasis on health and wellness.

Fifty years after Sharp Memorial Hospital opened its doors, the hospital is breaking ground on an expansion to enhance San Diego's single largest medical campus. The new hospital – scheduled for completion in 2007 – will be one of the most modern, technologically advanced and patient-focused care centers in the nation.

Dr. Low and the San Diego Diagnostic Radiology group have an extensive history of using GE's MR technology. For the group, image quality and system reliability are important considerations in any capital equipment purchase. What Dr. Low and his colleagues have also discovered is that their choice of a GE MR system has been a sound financial decision.

In 1999, the system underwent its first upgrade to an LX Echo Speed system. GE provides an upgrade path for all of its MR systems, recognizing the fact that while MR technology and applications advance over time, the system's basic physics and foundation remain relatively constant.

"There was no reason to remove and replace the entire system," Dr. Low explained. While the magnet and all siting requirements remained, the system was upgraded to provide improvements in performance and image quality, including single shot fast spin echo (SSFSE), MR cholangiopancreatography (MRCP), and 3D gradient-echo MR angiography.

Although the crux of the decision to upgrade versus replace was primarily a financial one, Dr. Low found the new capabilities on the LX model offered better images and faster patient throughput, which together further increased exam volume.

"It was a beautiful scanner, the best of the best, with excellent homogenous images," Dr. Low commented. While the scanner continued to provide high-quality, diagnostic images, industry trends and other factors, such as heightened demand and referrals, continued to increase utilization of the GE MR system.

In September 2005, the system was again upgraded to the HD platform. "We were so pleased with the new upgraded Signa HD system that we decided to upgrade the room as well, hiring an artist to paint murals on the wall and ultimately the scanner covers as well," he said. "Our pediatric and adult patients love the new artwork.

With what we've accomplished over 15 years with an MR system receiving two upgrades is impressive. The longevity of this MR system and its continuing productivity and excellent image quality is quite remarkable."

Today, the bustling center conducts 1,800 MR exams each month, triple its 1999 volume of 600 MR exams per month. "The large increase in volume speaks a lot to the quality, efficiency and economy of GE's MR systems and to the ever increasing clinical value of MR imaging," Dr. Low added. ■